SONY

3007116
SONY BDA
VPH1272Q/QM

3007116

3-758-106-**26** (1)

Multiscan Projector

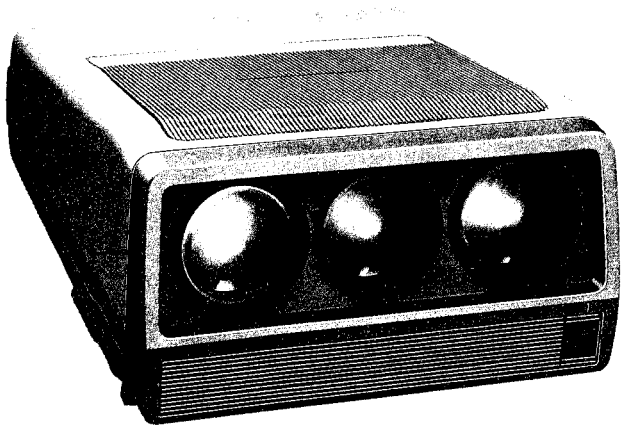
VPH-1272Q/1272QM
VPH-1252Q/1252QM

Installation Manual for Dealers

Before operating the unit, please read this manual thoroughly and retain it for future reference.

Mode d'emploi destiné aux revendeurs

Avant la mise en service de cet appareil, veuillez lire attentivement ce manuel que vous conserverez comme référence ultérieure.



VPH-1272Q/1272QM VPH-1252Q/1252QM

SuperData EX / SuperData

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Installation

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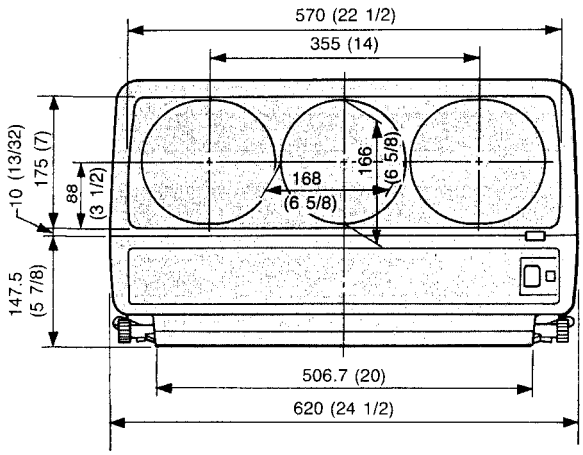
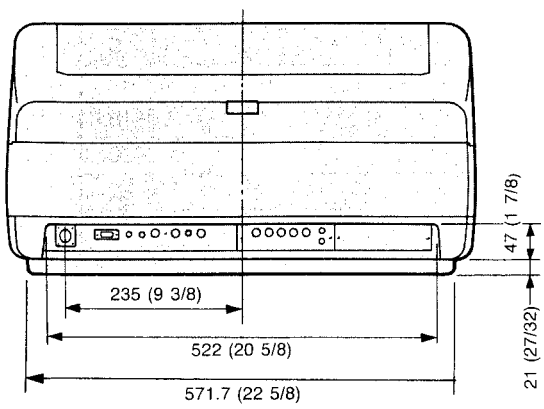
Projector Dimensions

Front



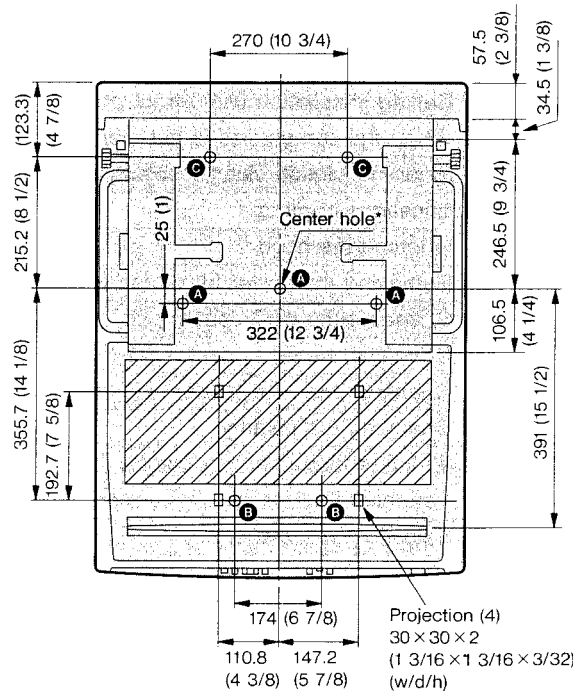
Rear



Bottom

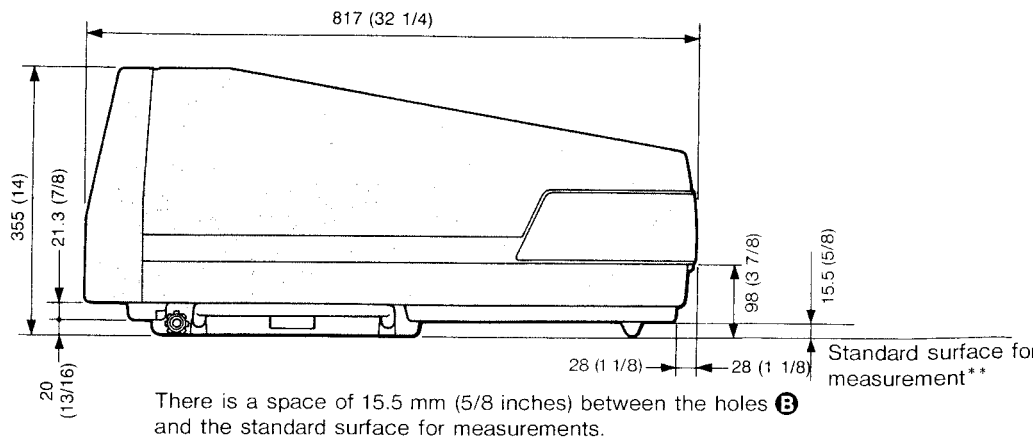
The center hole* on the bottom surface is used as the reference when you determine the measurements for installation. For normal installation, use the three holes Ⓐ to fix the projector. When installing the projector with the PSS-1272 projector suspension support, use the holes Ⓐ and the two holes Ⓑ. Use the M8 screws for the attachment holes. Determine their length in accordance with the following table.

For hole	Admittable length (measured from the standard surface**): mm (inches)
Ⓐ	55 (2 1/4)–79 (3 1/8)
Ⓑ	31 (1 1/4)–45 (1 13/16)
Ⓒ	12 (1/2)–30 (1 3/16)



There are ventilation holes in the area marked with oblique lines. Do not block this area.

Side

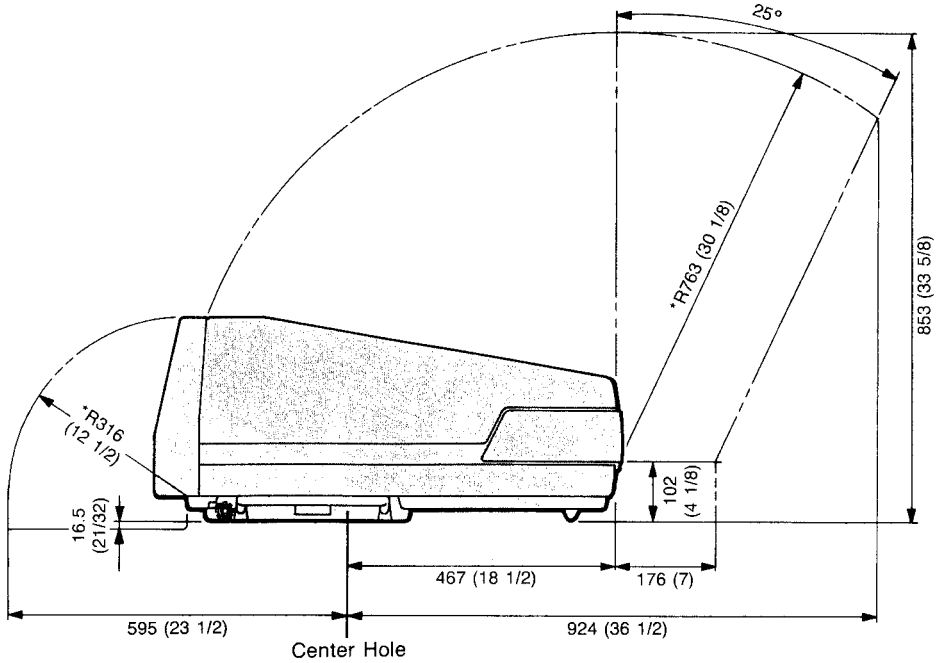


There is a space of 15.5 mm (5/8 inches) between the holes Ⓑ and the standard surface for measurements.

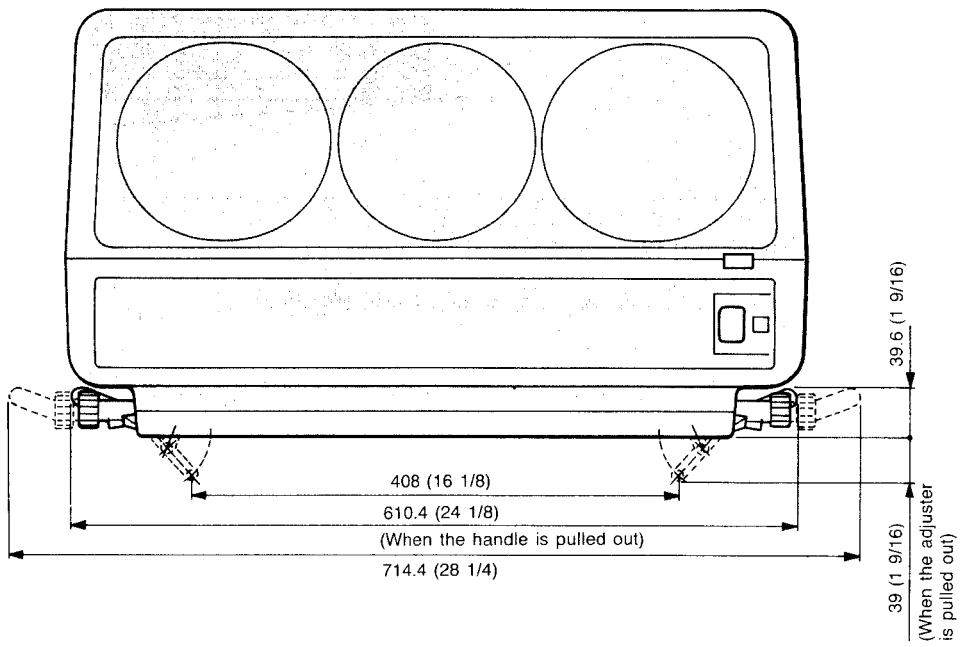
Unit : mm (inches)

Necessary Clearance for Maintenance

When you install the projector, be sure to provide the clearance around it as shown for maintenance service.



*R: Radius

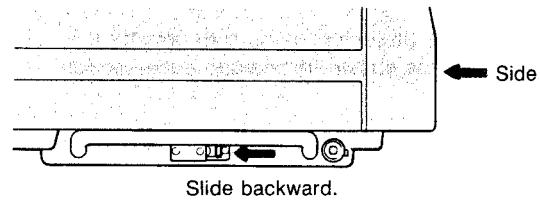


Unit: mm (inches)

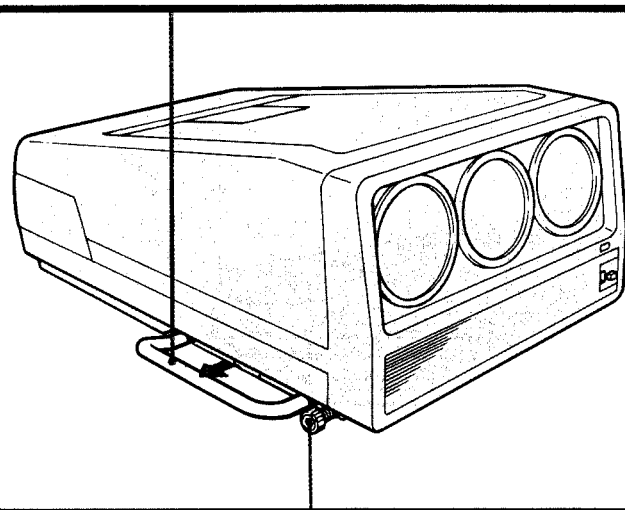
Using the Handle and Adjusters

Handle
Used for carrying the projector. Pull out to use.

Putting away the handle

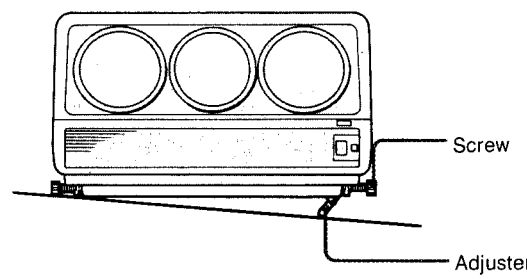


Slide backward.



How to use the adjusters

The horizontal tilt of the projector can be adjusted using the adjusters.



1 **Lift the projector by its handle and turn the screw to the left.**
The adjuster comes out.
If you use a Philips-head screwdriver, you can turn the screw without lifting the projector.

2 **Adjust the height.**
If it is too high, turn the screw to the right to lower the projector. If it is too low, lift the projector again and turn the screw to the left to raise the projector.

To retract the adjusters, tighten the screw by turning it to the right. Complete tightening of the screw puts away and locks the adjusters. Retract the adjusters when carrying the projector.

Installation Procedures

This projector is adjusted at the factory for projection on a 120-inch front projection type screen when the projector is installed on the floor/desk. If you install the projector in other conditions, modifications of some parts in the projector will be required. Therefore, installation procedures vary depending on the screen size, installation method and type of screen.

Floor Installation Using Front Projection Type Screen

Select the screen size.

86 — 139 inches

70 — 85 inches and 140 — 300 inches

Replace the CRT spacers. (Page 18)

Change the lens spacers. (Page 20)

Install the screen and the projector in accordance with the standard measurements.

- Using a flat screen (Page 8)
- Using a curved screen (Page 9)

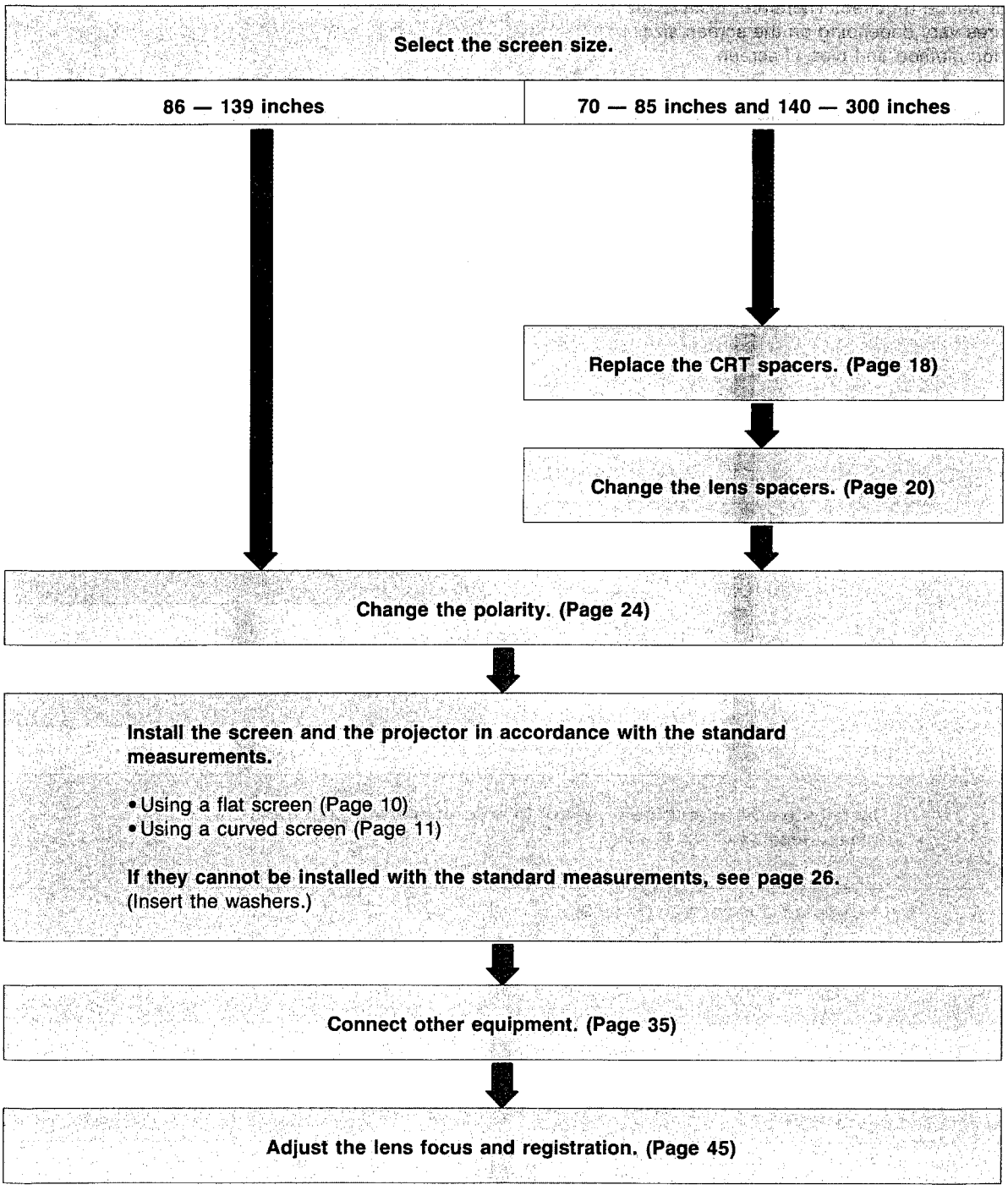
If they cannot be installed with the standard measurements, see page 26.
(Insert the washers.)

Connect other equipment. (Page 35)

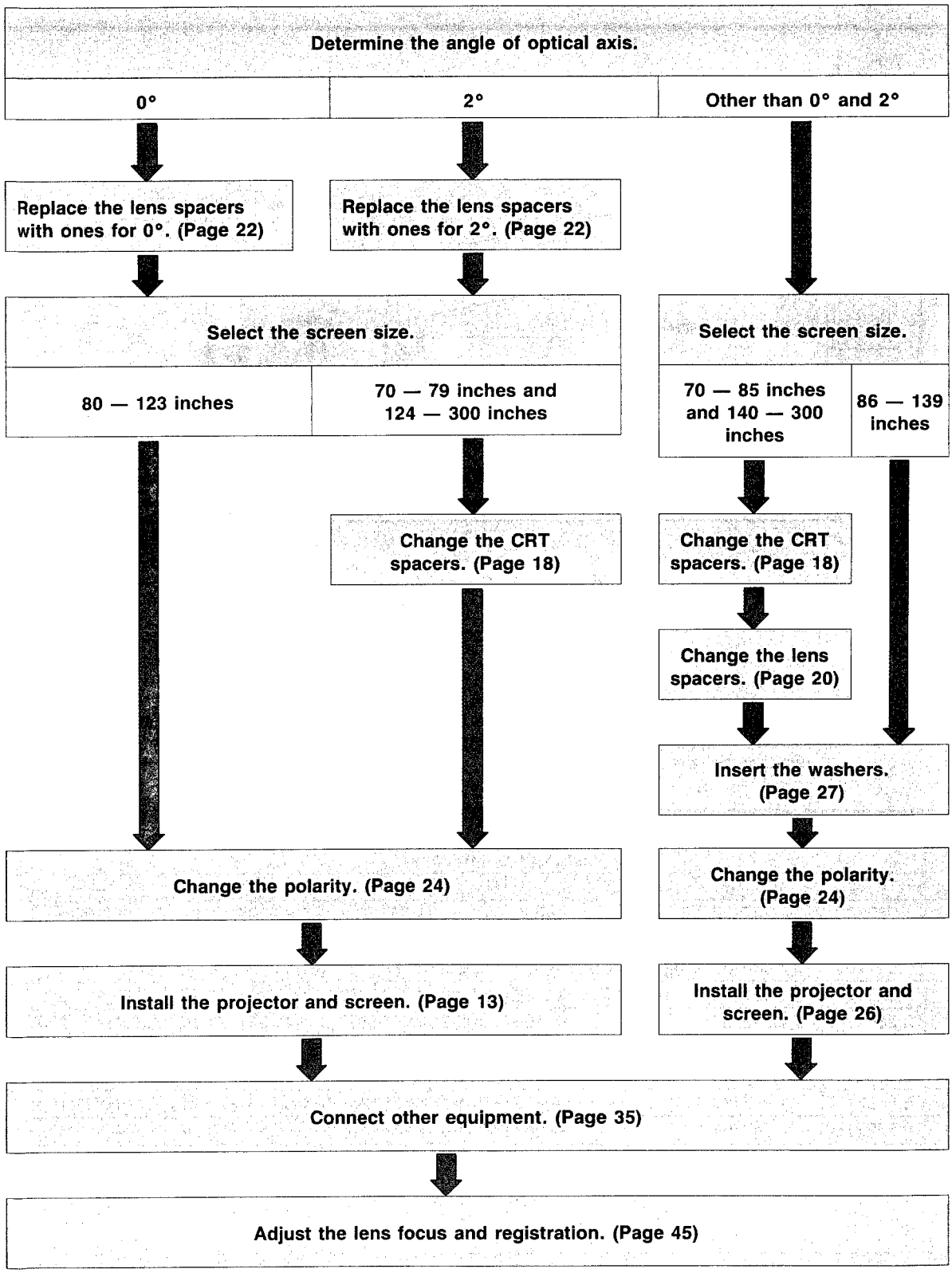
Adjust the lens focus and registration. (Page 45)

Installation Procedures

Ceiling Installation Using Front Projection Type Screen


Select the screen size.
86 — 139 inches
70 — 85 inches and 140 — 300 inches
Replace the CRT spacers. (Page 18)
Change the lens spacers. (Page 20)
Change the polarity. (Page 24)
Install the screen and the projector in accordance with the standard measurements.
• Using a flat screen (Page 10)
• Using a curved screen (Page 11)
If they cannot be installed with the standard measurements, see page 26.
(Insert the washers.)
Connect other equipment. (Page 35)
Adjust the lens focus and registration. (Page 45)

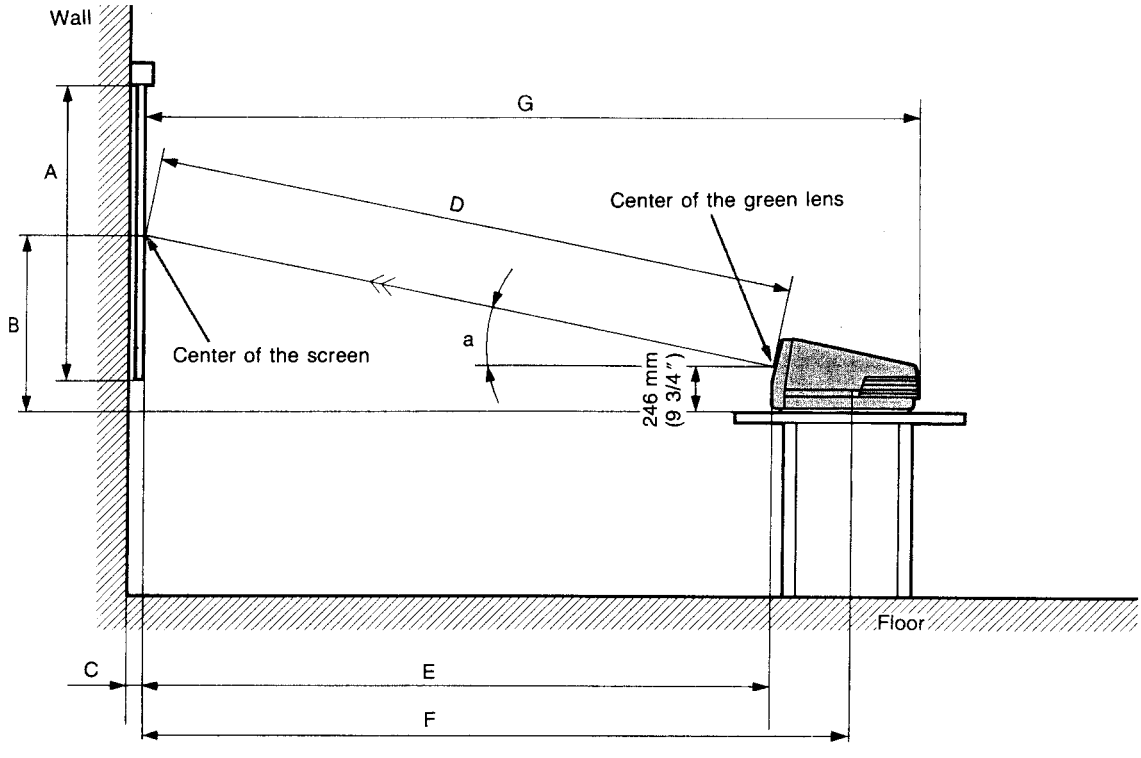
Floor Installation Using Rear Projection Type Screen


Determine the angle of optical axis.
0°
2°
Other than 0° and 2°
Replace the lens spacers with ones for 0°. (Page 22)
Replace the lens spacers with ones for 2°. (Page 22)
Select the screen size.
Select the screen size.
80 — 123 inches
70 — 79 inches and 124 — 300 inches
70 — 85 inches and 140 — 300 inches
86 — 139 inches
Change the CRT spacers. (Page 18)
Change the CRT spacers. (Page 18)
Change the lens spacers. (Page 20)
Insert the washers. (Page 27)
Change the polarity. (Page 24)
Change the polarity. (Page 24)
Install the projector and screen. (Page 13)
Install the projector and screen. (Page 26)
Connect other equipment. (Page 35)
Adjust the lens focus and registration. (Page 45)

Installation Diagrams

Floor Installation Using Front Projection Flat Screen

Be sure that the projector is parallel to the floor.



E: Horizontal distance between the center of the screen and the center of the green lens
B: Distance between the projector's bottom surface and the center of the screen

Tolerance in length
B: ±5%
Other measurements: −1% — +5%

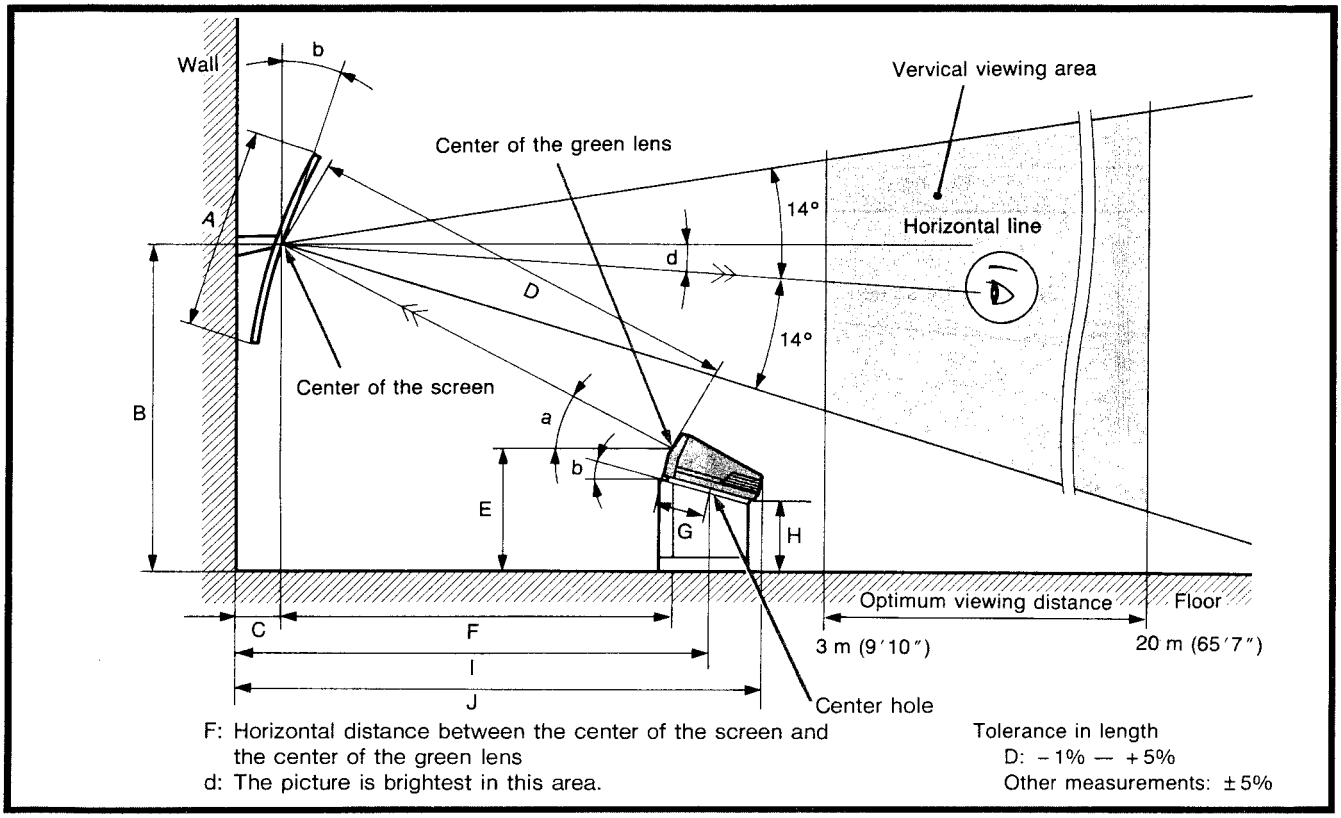
Screen size (inches)	Length mm (inches)							Angle (°)
	A	B	C	D	E	F	G	a
70	1,067 (42 1/8)	743 (29 3/8)	—	2,056 (81)	1,995 (78 5/8)	2,292 (90 1/4)	2,771 (109 1/8)	14.0
80	1,219 (48)	808 (31 7/8)	—	2,326 (91 5/8)	2,257 (88 7/8)	2,553 (100 5/8)	3,030 (119 3/8)	14.0
100*	1,524 (60)	960 (37 7/8)	(28 (1 1/8))	2,859 (112 5/8)	2,769 (109 1/8)	3,062 (120 5/8)	3,540 (139 3/8)	14.5
120**	1,829 (72 1/8)	1,091 (43)	(32 (1 5/16))	3,386 (133 3/8)	3,279 (129 1/8)	3,570 (140 5/8)	4,048 (159 3/8)	14.5
150	2,286 (90)	1,319 (52)	—	4,204 (165 5/8)	4,065 (160 1/8)	4,353 (171 1/2)	4,832 (190 1/4)	14.8
180	2,743 (108)	1,517 (59 3/4)	—	4,981 (196 1/8)	4,816 (189 5/8)	5,102 (200 7/8)	5,581 (219 3/4)	14.8
200	3,048 (120)	1,653 (65 1/8)	—	5,516 (217 1/4)	5,334 (210)	5,619 (221 1/4)	6,097 (240 1/8)	14.8
250	3,810 (150)	1,997 (78 5/8)	—	6,862 (270 1/4)	6,635 (261 1/4)	6,919 (272 1/2)	7,396 (291 1/4)	14.8
300	4,572 (180)	2,343 (92 1/4)	—	8,208 (323 1/4)	7,935 (312 1/2)	8,218 (323 5/8)	8,694 (342 3/8)	14.8

*Sony VPS-100FH
**Sony VPS-120FH

Necessary modifications of parts

- Spacer change (not necessary for use of the 100- and 120-inch screens) (page 18)

Floor Installation Using Front Projection Curved Screen



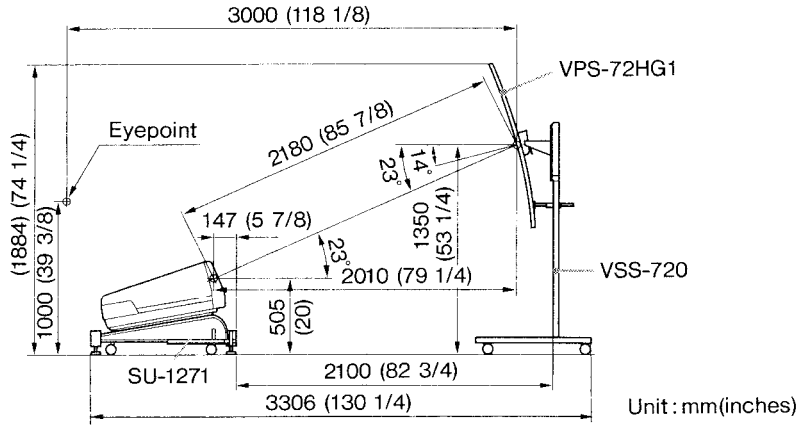
F: Horizontal distance between the center of the screen and the center of the green lens
d: The picture is brightest in this area.

Tolerance in length
D: −1% — +5%
Other measurements: ±5%

Screen size (inches)	Length mm (inches)										Angle (°)		
	A	B	C	D	E	F	G	H	I	J	a	b	d
72*	1,125 (44 3/8)	1,886 (74 3/8)	184 (7 1/4)	2,180 (85 7/8)	739 (29 1/8)	1,854 (73)	297 (11 3/4)	413 (16 3/8)	2,244 (88 3/8)	2,758 (108 5/8)	31.7	18.1	4.5
100**	1,600 (63)	2,107 (83)	303 (12)	3,002 (118 1/4)	545 (21 1/2)	2,564 (101)	293 (11 5/8)	223 (8 7/8)	3,073 (121)	3,585 (141 1/4)	31.4	17.4	3.4

*Sony VPS-72HG1 **Sony VPS-100HG1

Installation example



Unit: mm(inches)

Necessary modifications of parts

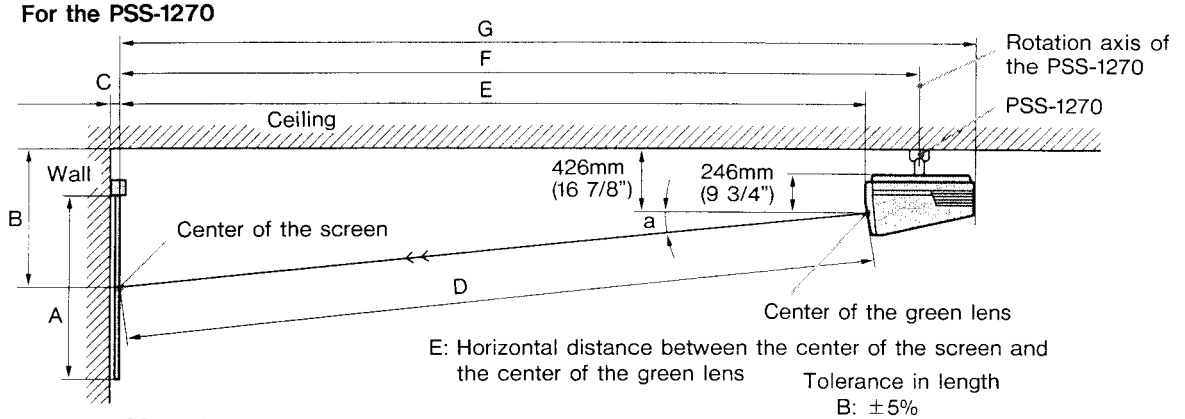
- Spacer change (only for use of the 72-inch screen) (page 18)

Installation Diagrams

Ceiling Installation Using Front Projection Flat Screen

Be sure that the projector is parallel to the ceiling.

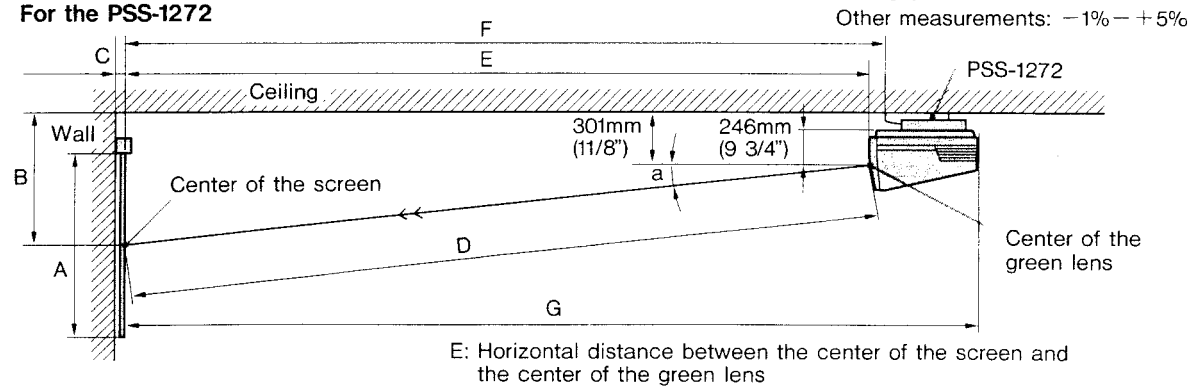
For the PSS-1270



E: Horizontal distance between the center of the screen and the center of the green lens

Tolerance in length
B: ±5%
Other measurements: −1%−+5%

For the PSS-1272



E: Horizontal distance between the center of the screen and the center of the green lens

Screen size (inches)	For the PSS-1270 Length mm (inches)							Angle (°)	For the PSS-1272 Length mm (inches)							Angle (°)
	A	B	C	D	E	F	G	a	A	B	C	D	E	F	G	a
70	1,067 (42 1/8)	923 (36 3/8)	—	2,056 (81)	1,995 (78 5/8)	2,318 (91 3/8)	2,771 (109 1/8)	14.0	1,067 (42 1/8)	798 (31 1/2)	—	2,056 (81)	1,995 (78 5/8)	2,148 (84 5/8)	2,771 (109 1/8)	14.0
80	1,219 (48)	988 (39)	—	2,326 (91 5/8)	2,257 (88 7/8)	2,577 (101 1/2)	3,030 (119 3/8)	14.0	1,219 (48)	863 (34)	—	2,326 (91 5/8)	2,257 (88 7/8)	2,407 (94 7/8)	3,030 (119 3/8)	14.0
100*	1,524 (60)	1,140 (45)	28 (1 1/8)	2,859 (112 5/8)	2,769 (109 1/8)	3,087 (121 5/8)	3,540 (139 3/8)	14.5	1,524 (60)	1,015 (40)	28 (1 1/8)	2,859 (112 5/8)	2,769 (109 1/8)	2,917 (114 7/8)	3,540 (139 3/8)	14.5
120**	1,829 (72 1/8)	1,271 (50 1/8)	32 (1 5/16)	3,386 (133 3/8)	3,279 (129 1/8)	3,595 (141 5/8)	4,048 (159 3/8)	14.5	1,829 (72 1/8)	1,146 (45 1/8)	32 (1 5/16)	3,386 (133 3/8)	3,279 (129 1/8)	3,425 (134 7/8)	4,048 (159 3/8)	14.5
150	2,286 (90)	1,499 (59 1/8)	—	4,204 (165 5/8)	4,065 (160 1/8)	4,379 (172 1/2)	4,832 (190 1/4)	14.8	2,286 (90)	1,374 (54 1/8)	—	4,204 (165 5/8)	4,065 (160 1/8)	4,209 (165 3/4)	4,832 (190 1/4)	14.8
180	2,743 (108)	1,697 (66 7/8)	—	4,981 (196 1/8)	4,816 (189 5/8)	5,128 (202)	5,581 (219 3/4)	14.8	2,743 (108)	1,572 (62)	—	4,981 (196 1/8)	4,816 (189 5/8)	4,958 (195 1/4)	5,581 (219 3/4)	14.8
200	3,048 (120)	1,833 (72 1/4)	—	5,516 (217 1/4)	5,334 (210)	5,644 (222 1/4)	6,097 (240 1/8)	14.8	3,048 (120)	1,708 (67 1/4)	—	5,516 (217 1/4)	5,334 (210)	5,474 (215 5/8)	6,097 (240 1/8)	14.8
250	3,810 (150)	2,177 (85 3/4)	—	6,862 (270 1/4)	6,635 (261 1/4)	6,943 (273 3/8)	7,396 (291 1/4)	14.8	3,810 (150)	2,052 (80 7/8)	—	6,862 (270 1/4)	6,635 (261 1/4)	6,773 (266 3/4)	7,396 (291 1/4)	14.8
300	4,572 (180)	2,523 (99 3/8)	—	8,208 (323 1/4)	7,935 (312 1/2)	8,241 (324 1/2)	8,694 (342 3/8)	14.8	4,572 (180)	2,398 (94 1/2)	—	8,208 (323 1/4)	7,935 (312 1/2)	8,071 (317 7/8)	8,694 (342 3/8)	14.8

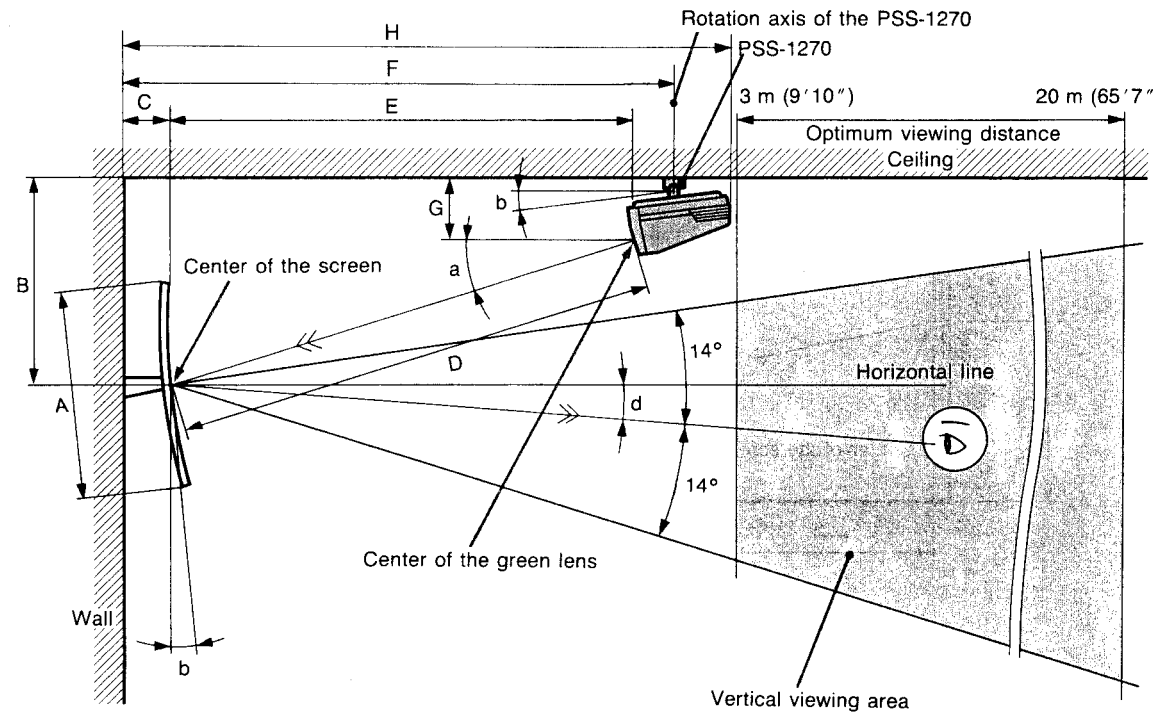
*Sony VPS-100FH, **Sony VPS-120FH

Note "a" is the angle of the optical axis when the projector is in a horizonal position.
"A" is the effective vertical length of a 4:3 standard size screen.

Necessary modifications of parts

- Spacer change (not necessary for use of 100- and 120-inch screens) (page 18)
- Polarity change on the DC and E boards (page 24)

Ceiling Installation Using Front Projection Curved Screen



E: Horizontal distance between the center of the screen and the center of the green lens
d: The picture is brightest in this area.

Tolerance in length
D: −1% — +5%
Other measurements: ±5%

Screen size (inches)	Length mm (inches)								Angle (°)		
	A	B	C	D	E	F	G	H	a	b	d
72*	1,125 (44 3/8)	1,271 (50 1/8)	185 (7 3/8)	2,180 (85 7/8)	2,025 (79 3/4)	2,477 (97 5/8)	464 (18 3/8)	2,965 (116 3/4)	21.7	8.1	5.5
100**	1,600 (63)	1,639 (64 5/8)	305 (12 1/8)	3,002 (118 1/4)	2,764 (108 7/8)	3,324 (130 7/8)	467 (18 1/2)	3,815 (150 1/4)	23.0	9.0	5.0

*Sony VPS-72HG1
**Sony VPS-100HG1

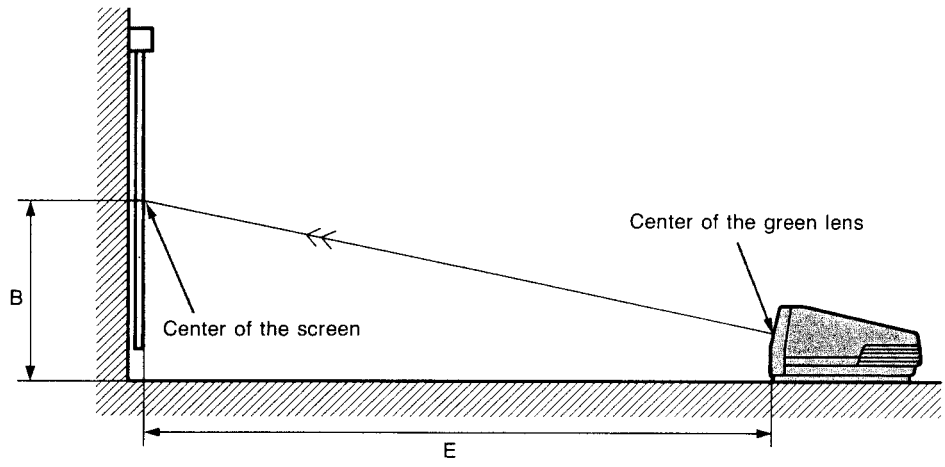
Necessary modifications of parts

- Spacer change (only for use of the 72-inch screen) (page 18)
- Polarity change on the DC and E boards (page 24)

Installation Diagrams

When the Screen Size is Not Mentioned in the Tables

When using the front projection screen for both floor and ceiling installations, the installation measurements can be calculated as follows:



E: Projection distance
B: Screen height

When the screen size is between 70 and 85 inches
E (mm) = 25.78 x Screen size + 191
B (mm) = Value E (mm) x 0.249 + 246
Example: 75-inch screen
E = 25.78 x 75 + 191 = 2,125 mm
B = 2,125 x 0.249 + 246 = 775 mm

When the screen size is between 86 and 139 inches
E (mm) = 25.78 x Screen size + 191
B (mm) = Value E (mm) x 0.258 + 246

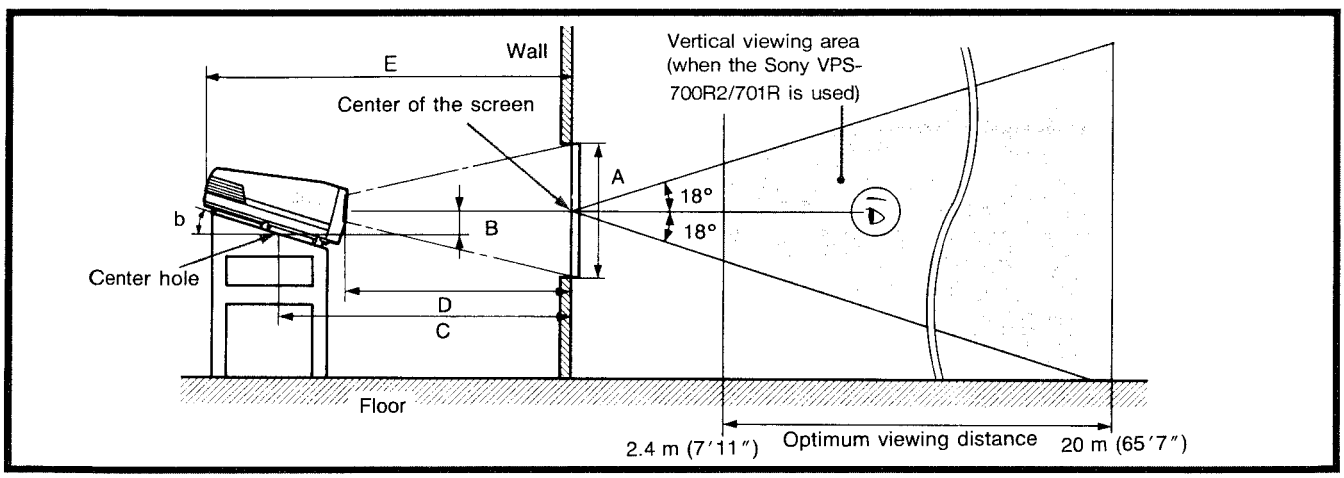
When the screen size is between 140 and 300 inches
E (mm) = 25.78 x Screen size + 191
B (mm) = Value E (mm) x 0.264 + 246

Floor Installation Using Rear Projection Flat Screen

What Is the angle of optical axis?
The angle of optical axis is the angle between the horizontal line which is level with the center of the screen and the straight line from the center of the projector's green lens to the center of the screen. When a rear projection screen is used, you can get the brightest picture along the extension of the straight line between the center of the green lens and the center of the screen.

Therefore, the most suitable angle of optical axis (a) varies depending on the height of the screen and the line of your sight.
A standard rear projection installation is that wherein this angle is 0° or 2°.

When the angle of optical axis is 0°



a = 0° (b = 13.4° ±0.5°)

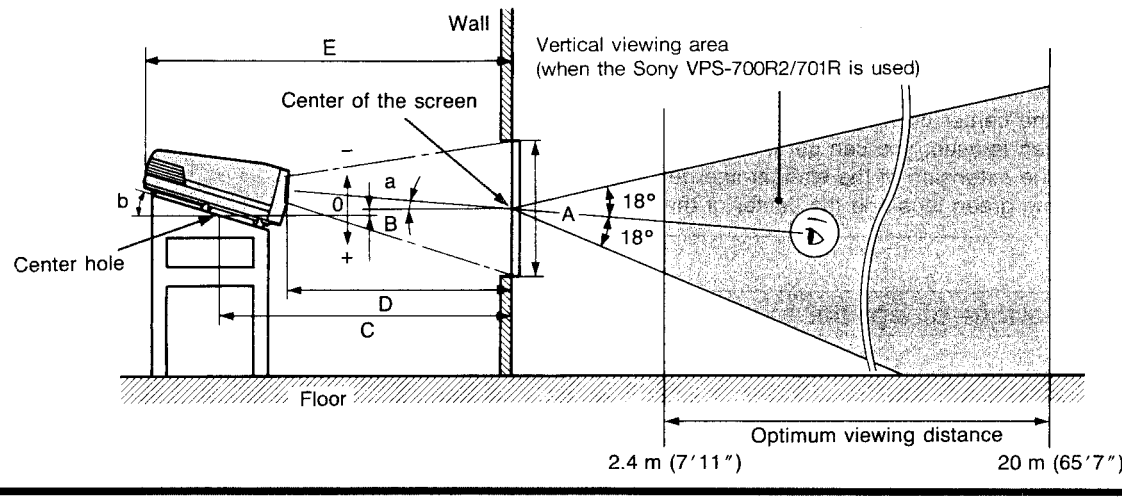
Screen size (inches)	Length mm (inches)				
	A	B	C	D	E
70	1,067 (42 1/8)	174 (6 7/8)	2,384 (93 7/8)	2,037 (80 1/4)	2,825 (111 1/4)
80	1,219 (48)	174 (6 7/8)	2,659 (104 3/4)	2,314 (91 1/8)	3,100 (122 1/8)
100	1,524 (60)	174 (6 7/8)	3,171 (124 7/8)	2,829 (111 1/2)	3,612 (142 1/4)
120	1,829 (72 1/8)	174 (6 7/8)	3,690 (145 3/8)	3,351 (132)	4,131 (162 3/4)
150	2,286 (90)	174 (6 7/8)	4,480 (176 1/2)	4,143 (163 1/8)	4,921 (193 3/4)
180	2,743 (108)	174 (6 7/8)	5,265 (207 3/8)	4,929 (194 1/8)	5,706 (224 3/4)
200	3,048 (120)	174 (6 7/8)	5,791 (228)	5,456 (214 7/8)	6,232 (245 3/8)
250	3,810 (150)	174 (6 7/8)	7,120 (280 3/8)	6,787 (267 1/4)	7,561 (297 3/4)
300	4,572 (180)	174 (6 7/8)	8,449 (332 3/4)	8,118 (319 5/8)	8,890 (350)

Necessary modifications of parts

- Spacer change (not necessary for the CRT spacers when using the 100- and 120-inch screens) (page 18)
- Polarity change on the E board (page 24)

Installation Diagrams

When the angle of optical axis is 2°



a = 2° (b = 15.4° ±0.5°)

Screen size (inches)	Length mm (inches)				
	A	B	C	D	E
70	1,067 (42 1/8)	91 (3 5/8)	2,388 (94 1/8)	2,035 (80 1/8)	2,821 (111 1/8)
80	1,219 (48)	80 (3 1/4)	2,685 (105 3/4)	2,334 (92)	3,118 (122 7/8)
100	1,524 (60)	63 (2 1/2)	3,174 (125)	2,826 (111 3/8)	3,607 (142 1/8)
120	1,829 (72 1/8)	45 (1 13/16)	3,692 (145 3/8)	3.347 (131 7/8)	4,125 (162 1/2)
150	2,286 (90)	17 (11/16)	4,496 (177 1/8)	4,153 (163 5/8)	4,929 (194 1/8)
180	2,743 (108)	–10 (–13/32)	5,266 (207 3/8)	4,924 (193 7/8)	5,699 (224 3/8)
200	3,048 (120)	–28 (–1 1/8)	5,791 (228)	5,450 (214 5/8)	6,224 (245 1/8)
250	3,810 (150)	–75 (–3)	7,118 (280 1/4)	6,779 (267)	7,551 (297 3/8)
300	4,572 (180)	–120 (–4 3/4)	8,447 (332 5/8)	8,109 (319 3/8)	8,880 (349 5/8)

Necessary modifications of parts

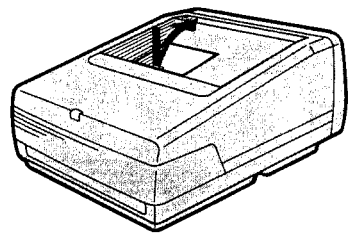
- Spacer change (not necessary for the CRT spacers when using the 100- and 120-inch screens) (page 18)
- Polarity change on the E board (page 24)

Modifications of Parts

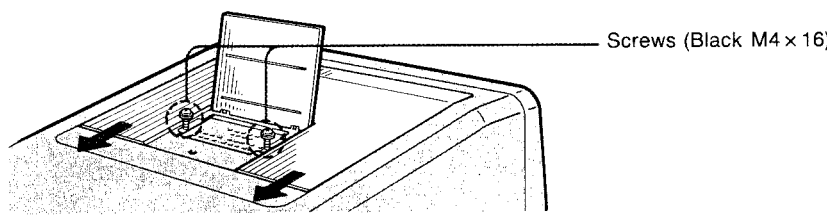
To modify certain parts in the projector, such as changing the spacers, open the hood after removing the top panel. You may keep the hood open by supporting it with the stay, or remove the hood while making modifications. It is also necessary to remove the power block and HV block depending on the modifications.

Opening the Hood

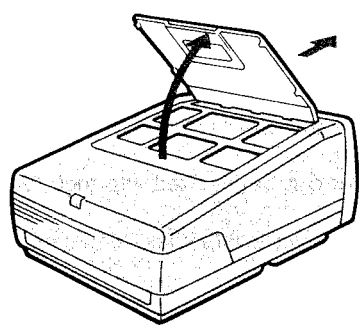
1 **Push the part marked "PUSH" on the control panel cover to open.** (Do not use force to open.)



2 **Loosen the two screws of the control panel and slide the top panel in the direction of the arrow.** (The screws do not come out of the hole to prevent their getting lost.)



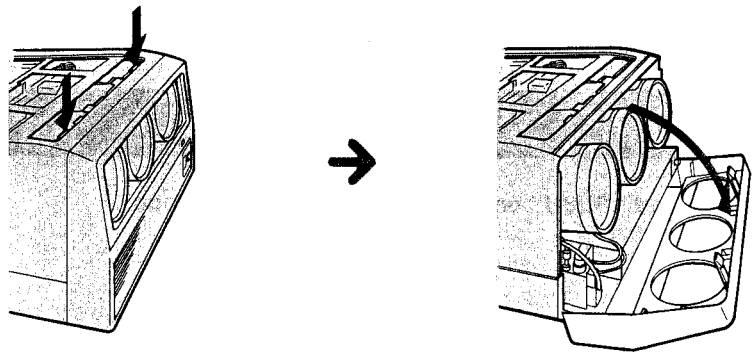
3 **Open the top panel toward the lens section, and remove it.**



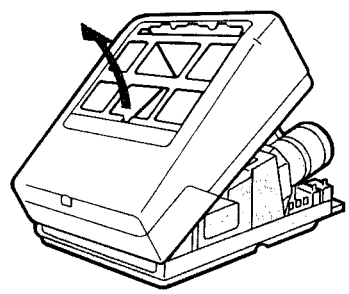
To be continued

Modifications of Parts

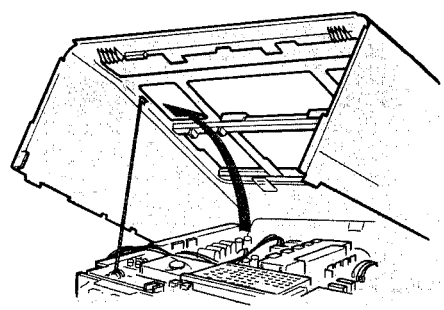
4 **Press down the levers on both sides of the front panel to open toward you and remove the front panel.**



5 **Lift the front side of the hood upward.**



6 **Raise the stay to support the hood properly.**



Note
You can remove the hood if necessary.

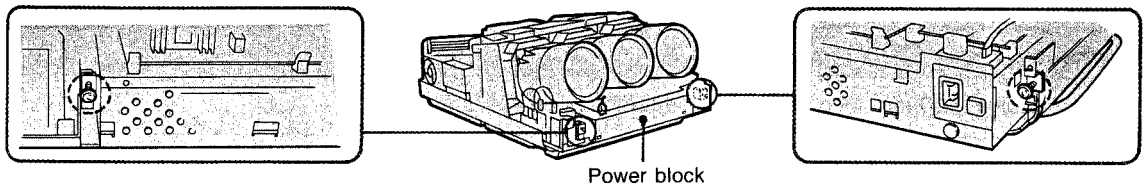
To replace the hood, front panel and top panel

1 Retract the stay properly in the stay lock.
2 Position the hood so that the two screws can be inserted into their locations on the control panel. Tighten the screws.
3 Replace the front panel and press it until both levers click. Make sure that the levers are properly fixed to the hood.
4 Replace the top panel.

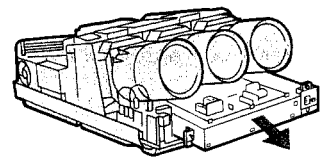
Removing the Power Block and HV Block

Be sure to remove the power block first, and then remove the HV block.

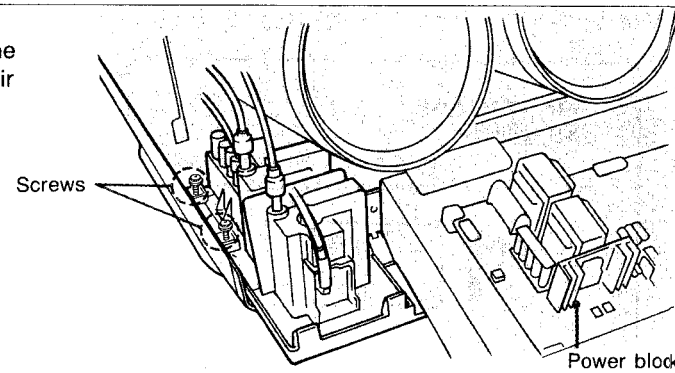
1 **Loosen the two screws at both sides of the power block.**
(The screws are retained in the hole, to prevent their getting lost.)



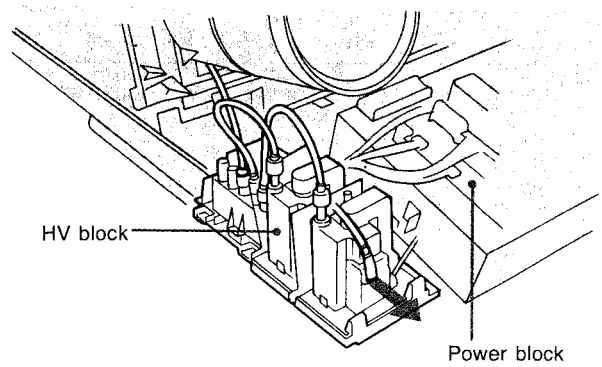
2 **Unfasten the lock which secures the lead wires, and pull the power block out toward you.**



3 **Loosen the two screws of the HV block.** (The screws are retained in the hole, to prevent their getting lost.)



4 **Pull the HV block out toward you.**



To replace the power block and HV block

1 Replace the HV block and tighten the two screws, making sure that the lead wire is not sagging.
2 Reinstall the power block. Make sure that it is pushed inside fully and then fasten the screws.

Be sure to replace the HV block first, then the power block.

Modifications of Parts

Changing the CRT Spacers

The CRT spacers of the projector attached at the factory are for 86- to 139-inch front projection (or for 80- to 123-inch rear projection). For projection other than these screen sizes, the CRT spacers must be replaced.

The CRT spacers should be attached to the blue and red cathode-ray tubes only.

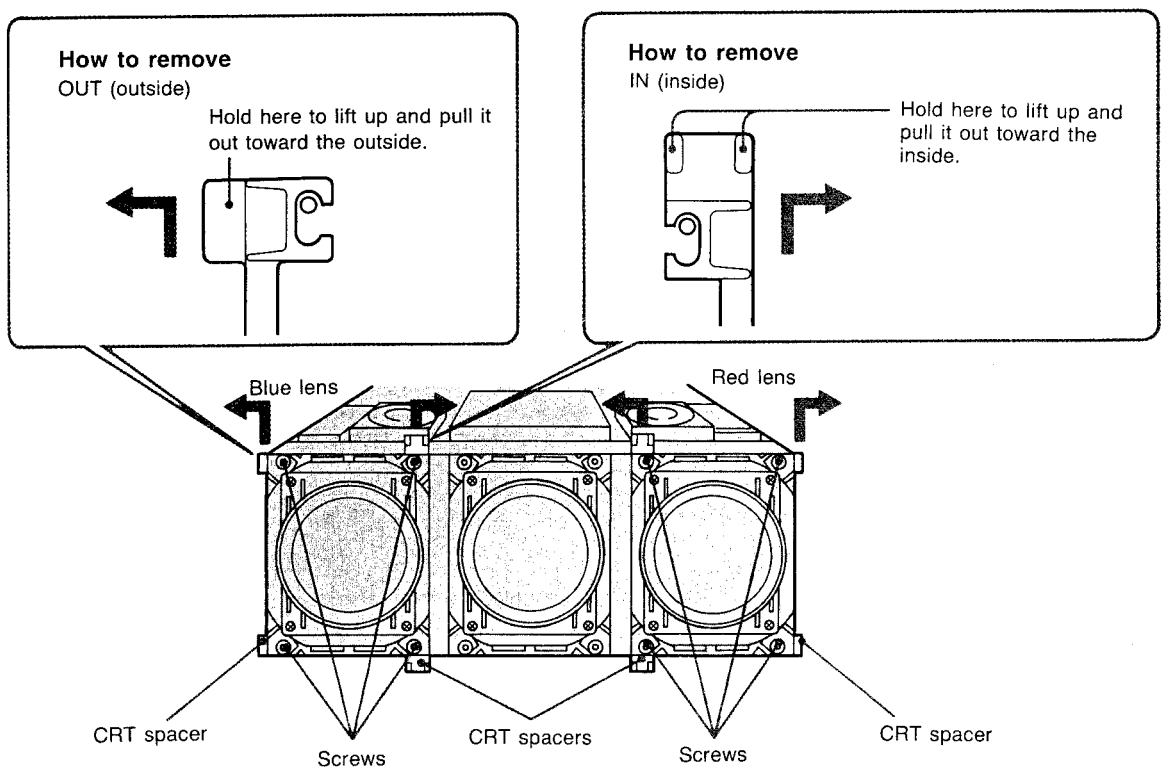
How to change the CRT spacers

Use a box screwdriver 400 mm long with a diagonal measurement of 8 mm.

1 **Remove the hood. (See page 15.)**

2 **Remove the power block and HV block. (See page 17.)**

3 **Loosen the four screws and remove the two CRT spacers that were attached at the factory for red and blue cathode-ray tubes.**



4 **Confirm the necessary spacer size using the following table and attach the supplied CRT spacers to both the outside and inside of the red and blue cathode-ray tubes.**

Attach the spacers with the "OUT" mark to the outside and the ones with the "IN" mark to the inside of the CRTs.

Front projection

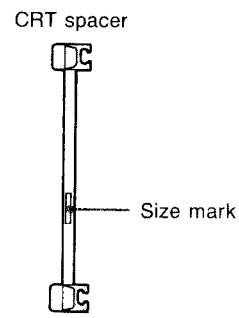
Screen size (inches)	70 — 85	86 — 139	140 — 300
Size mark	S	M (preset at the factory)	L

Rear projection

Screen size (inches)	70 — 79	80 — 123	124 — 300
Size mark	S	M (preset at the factory)	L

Notes

- The screen size ranges at the front projection and rear projection are different.
- When the washers are to be inserted (page 26), see the table for front projection even in the case of rear projection.



5 **Fasten all screws as before.**

Modifications of Parts

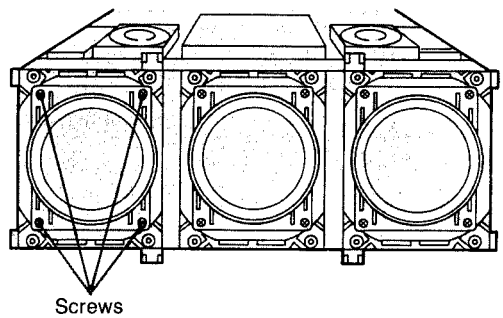
Changing the Lens Spacers for Front Projection

The lens spacers attached at the factory are for 86- to 139-inch front projection. For projection other than these screen sizes, change the lens spacers.

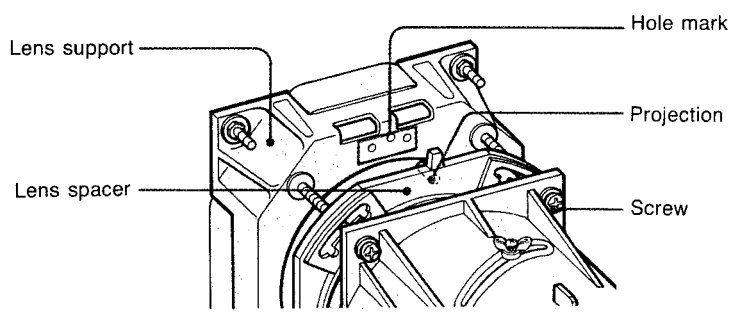
1 **Remove the hood. (See page 15.)**

2 **Remove the power block and HV block. (See page 17.)**

3 **Loosen the four screws each of the red, green, and blue lenses.**
Make sure that the projections under the two upper screws are separated from the lens spacer.

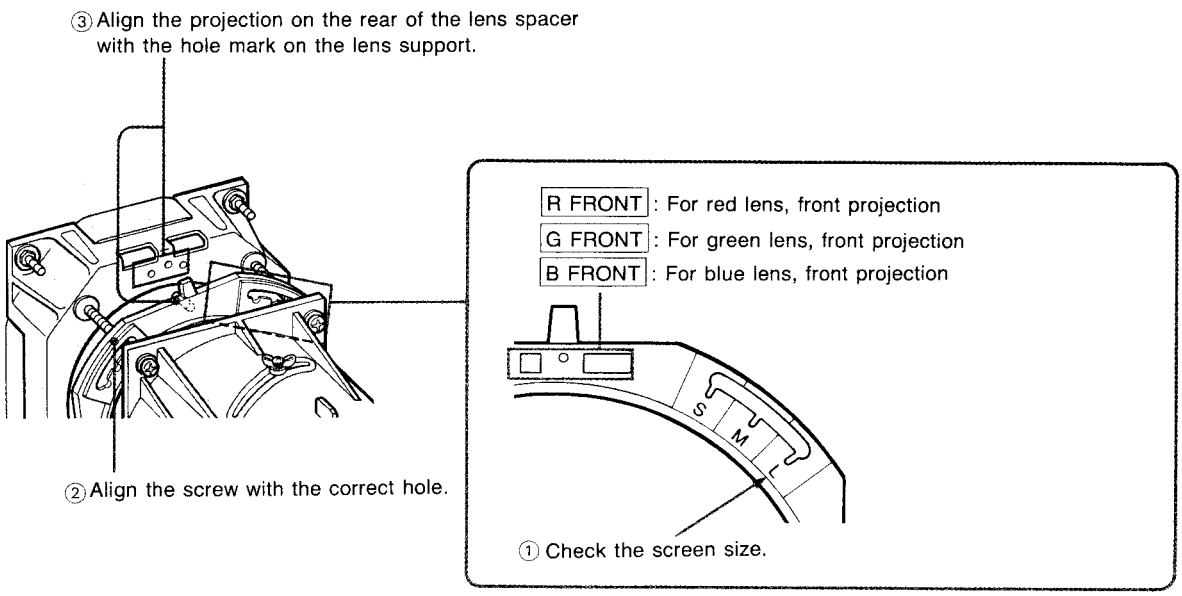


4 **Separate the projection on the rear of the lens spacer from the hole mark on the lens support.**



5 **Confirm which hole is to be used, using the following table.**
Align the screw with that hole to fix the lens spacer to the lens support.

Lens	Screen size (inches) / Lens spacer	70 — 85	86 — 139	140 — 300
Red	R FRONT	S	M (preset at the factory)	L
Green	G FRONT			
Blue	B FRONT			


③ Align the projection on the rear of the lens spacer with the hole mark on the lens support.
② Align the screw with the correct hole.
R FRONT : For red lens, front projection
G FRONT : For green lens, front projection
B FRONT : For blue lens, front projection
S
M
L
① Check the screen size.

6 **Make sure that each lens spacer is firmly attached to the lens support and fasten the four screws for each lens.**

7 **Reinstall the HV block and power block. (See page 17.)**

8 **Reinstall the hood, front panel and top panel. (See page 16.)**

Note
If it is difficult to change the lens spacer while the lens is attached, remove the lens.

Modifications of Parts

Changing the Lens Spacers for Rear Projection

Screen sizes and the necessary spacers

Determine the necessary spacers and confirm the size to be used.

Angle of optical axis	Lens	Screen size* / Lens spacer	70 — 79	80 — 123	124 — 300
0°	Red	R-0 REAR	S	M	L
	Green	G-0 REAR	Usable for all sizes		
	Blue	B-0 REAR	S	M	L
2°	Red	R-2 REAR	S	M	L
	Green	G-2 REAR			
	Blue	B-2 REAR			

* Note that the screen size ranges differ from those of lens spacers for front projection.

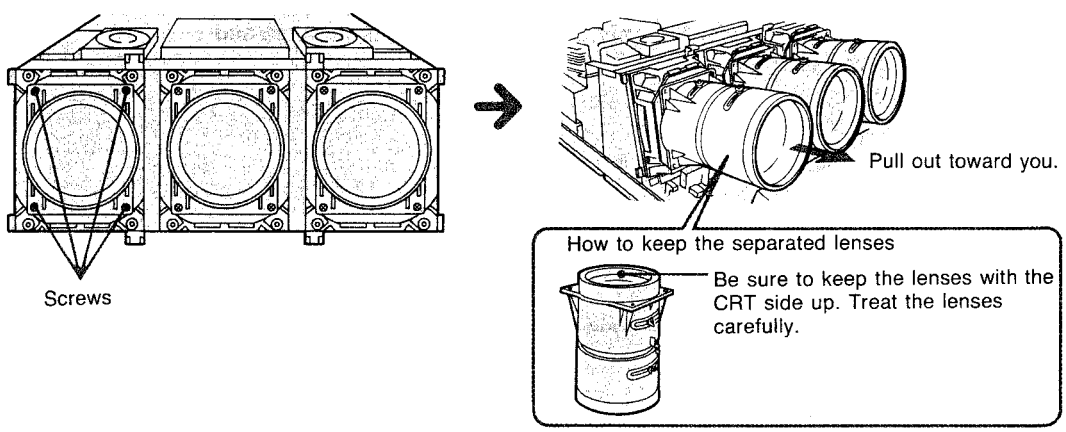
Note
When the washers are to be inserted, see the table for front projection (page 21), even in the case of rear projection.

How to change the lens spacers

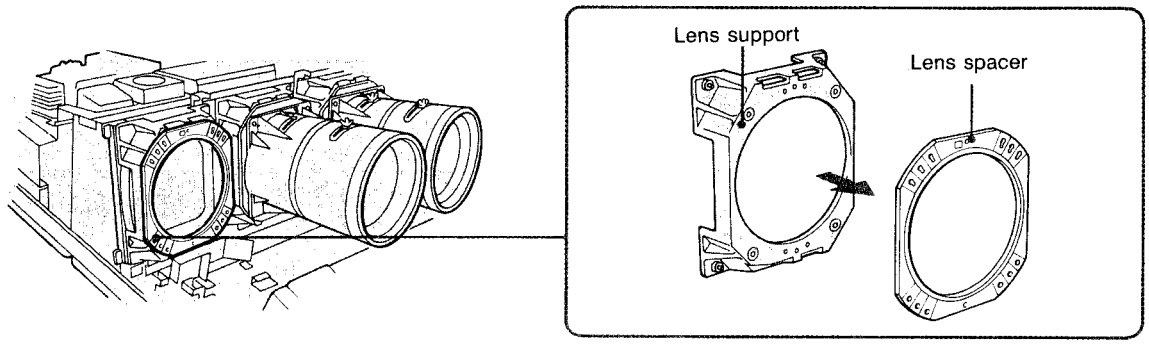
1 **Remove the hood. (See page 15.)**

2 **Remove the power block and HV block. (See page 17.)**

3 **Remove the lenses from the lens supports.**
Remove the four screws of each lens and pull the lens out toward you.

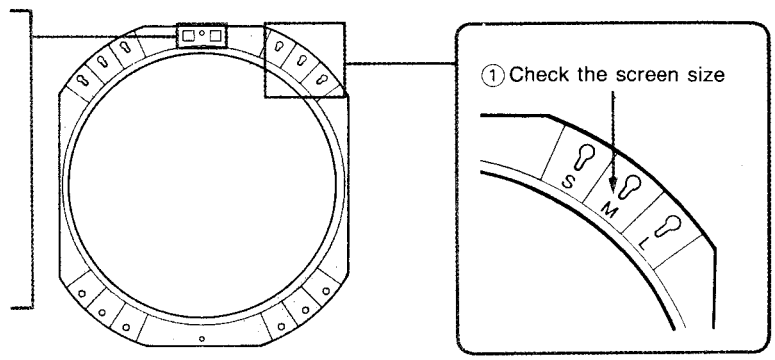

Screws
Pull out toward you.
How to keep the separated lenses
Be sure to keep the lenses with the CRT side up. Treat the lenses carefully.

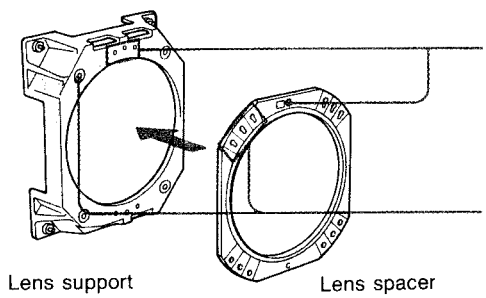
4 Remove each lens spacer.



5 See the table on page 22 to select the correct lens spacer from the supplied ones. Then, confirm the hole to be used and fix the lens spacer with the lens support, aligning that hole.

- R-0 · REAR : For red, angle of optical axis "0°"
- B-0 · REAR : For blue, angle of optical axis "0°"
- R-2 · REAR : For red, angle of optical axis "2°"
- B-2 · REAR : For blue, angle of optical axis "2°"
- G-2 · REAR : For green, angle of optical axis "2°"





③ Align the projection on the rear of the lens spacer with the hole mark on the lens support.

② Align the hole to be used with the screw hole on the lens support.

6 Reinstall the lenses. Make sure that each lens spacer is firmly attached to the lens support, then fasten the four screws for each lens.

7 Reinstall the power block and HV block. (See page 17.)

8 Reinstall the hood, front panel and top panel. (See page 16.)

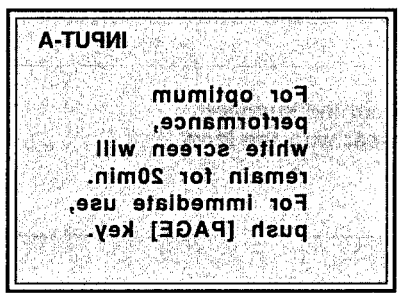
Modifications of Parts

Changing the Polarity

This projector is preset at the factory for use in front projection when the projector is installed on the floor/desk. When the projector is installed on the ceiling or used in rear projection, the display will be shown as follows when the power is turned on. Change the polarity to reverse the display.

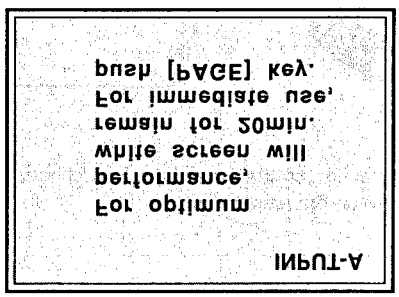
A

The letters are backward.
Change the connectors on the E board.



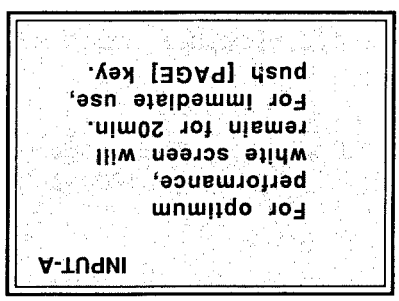
B

The letters are upside down.
Change the connectors on the DC board.

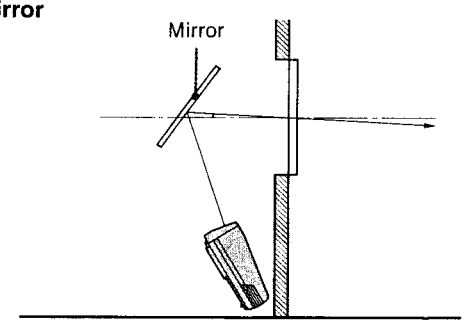
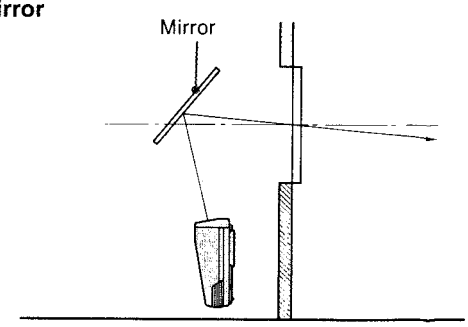
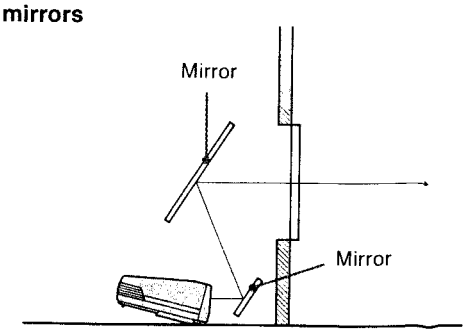


C

The letters are upside down and backward.
Change the connectors on the DC and E boards.



Necessary polarity changes according to the installation methods

Installation methods
Front projection, ceiling
Rear projection, floor
Rear projection, ceiling
Rear projection using mirrors
Using a mirror 
Using a mirror 
Using two mirrors 
Others

Y: Necessary
N: Not necessary

	Change on DC board	Change on E board	On-screen Display
	Y	Y	C
	N	Y	A
	Y	N	B
	N	N	Correct picture
	Y	Y	C
	N	Y	A
	Display the letters on the screen and determine which changes to be made.		

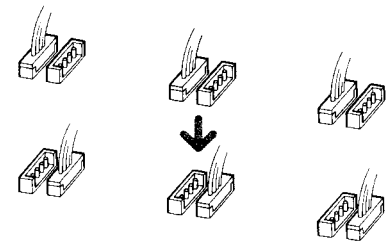
How to change the polarity

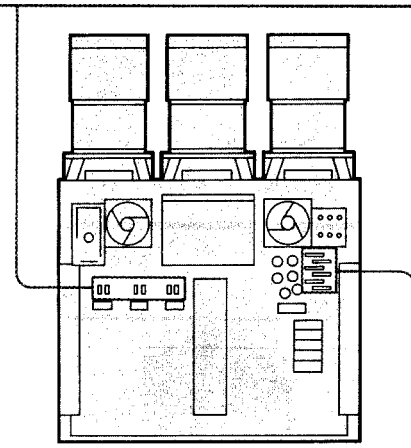
1 **Turn off the power.**

2 **Open the hood. (See page 15.)**

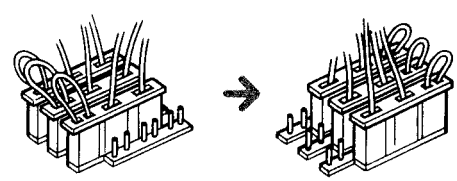
3 **Change the connectors.**

DC board: Shift the connectors to the immediately parallel receptacle.





E board: Reinsert the connectors after turning them over (180°).



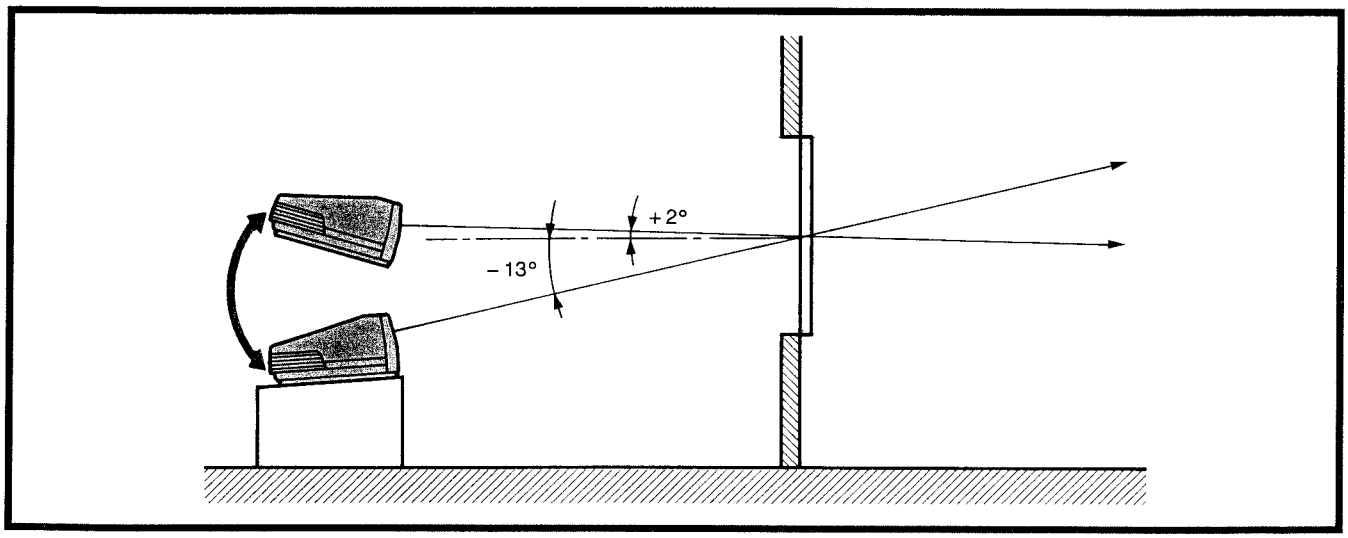
4 **Make sure to insert the connectors firmly.**

When Installation Does not Comply with Standard Measurements

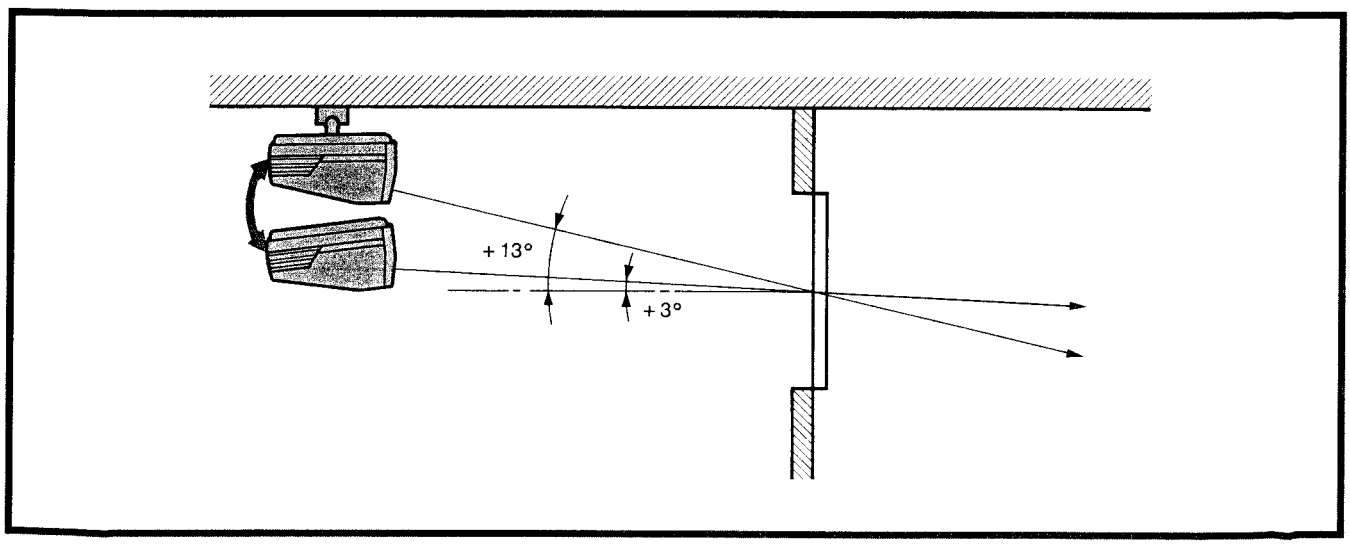
If the projector cannot be installed using a standard installation method mentioned on pages 8 to 14, you cannot obtain the picture in focus no matter how you adjust the lens focus. In that case, insert the supplied washers between the lens and cathode-ray tube so that the lens can be focused.

Variable Range of the Angle of Optical Axis in Rear Projection

This projector can be installed on the floor within an angle of optical axis 2° to −13° as shown in the illustration.



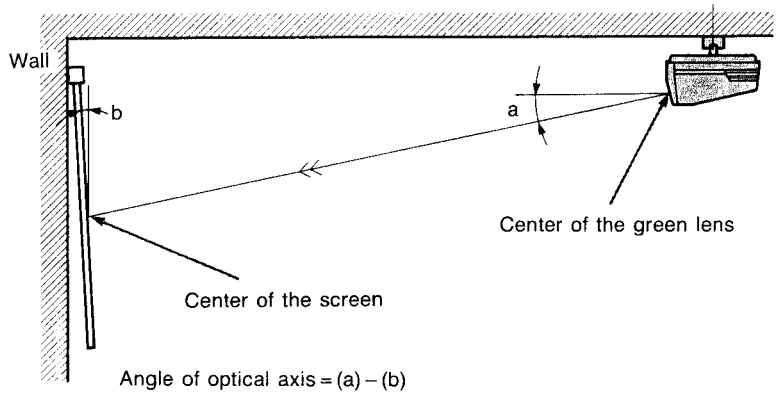
When the projector is installed on the ceiling, the angle of optical axis must be within +3° to +13°.



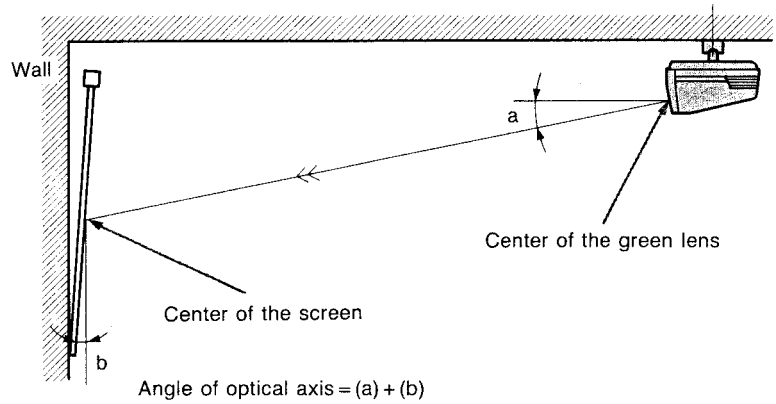
If the angle is 0° or 2°, you need not insert the washers.

Selecting the Washer

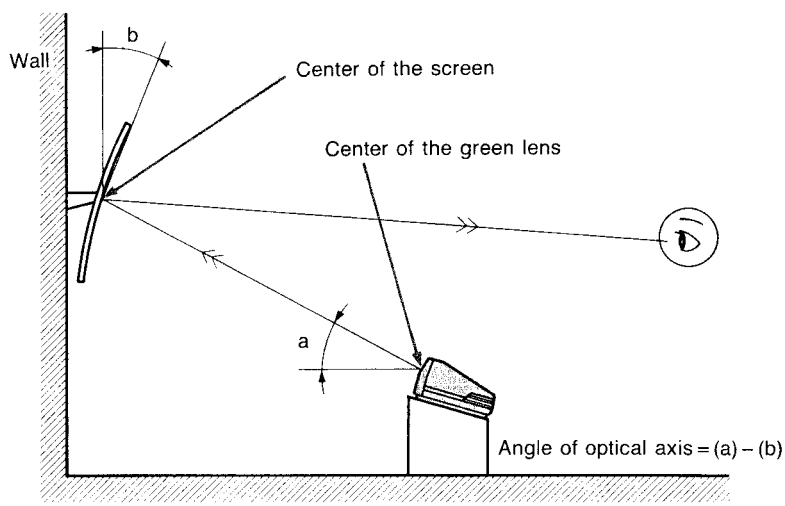
1 **Use the installation plan to find the angle (a) on the straight line from the center of the screen to the center of the projector's green lens.**
When there is an angle (b) on a screen (which is not perpendicular) as shown in the illustrations, subtract this angle (b) from the angle (a) to find the angle of optical axis against the screen.



Angle of optical axis = (a) – (b)



Angle of optical axis = (a) + (b)



Angle of optical axis = (a) – (b)

To be continued

When Installation Does not Comply with Standard Measurements

2 **Use the "List of washers used for non-standard installation" to determine the washers (A) required in accordance with the corresponding angle and the screen size.**

Example: When the angle is 8° with a 120-inch screen

The data given in the list is as follows.

A	0.4 + 0.4
B	65

(A: Washer thickness
B: See page 67.)

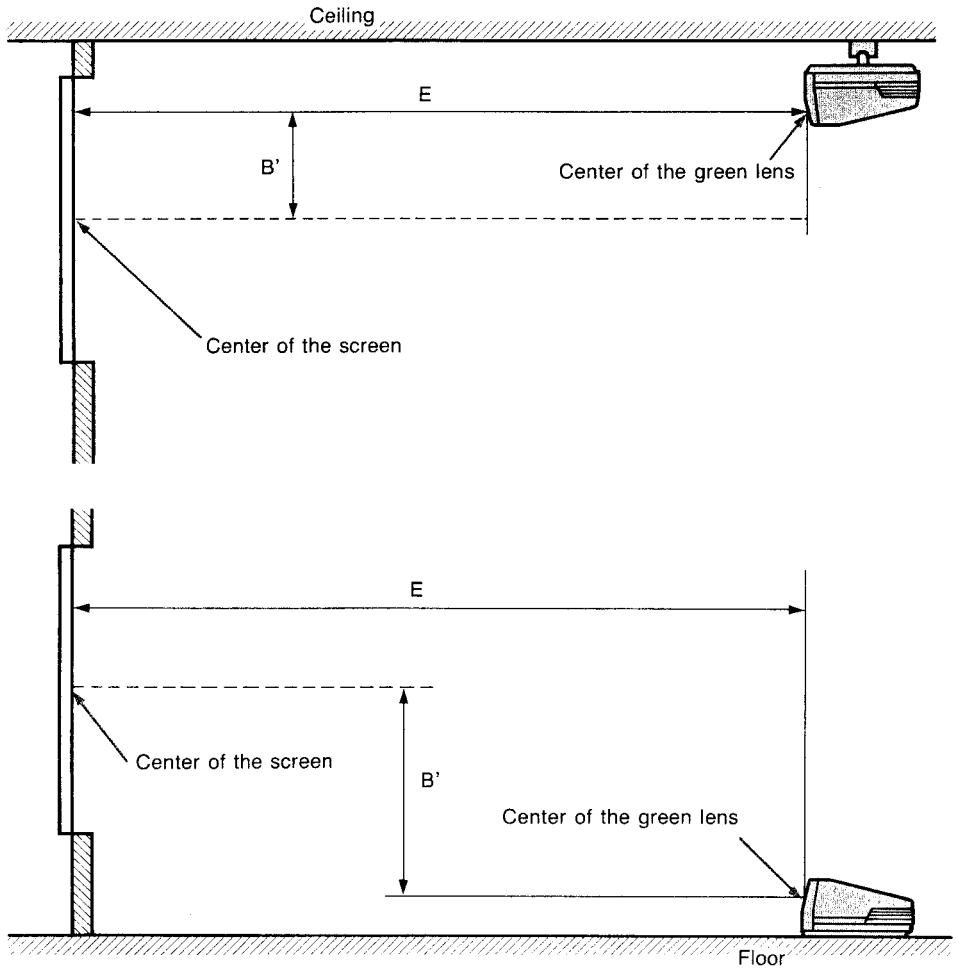
In this case, install two 0.4-mm thick washers (supplied).

Notes

- Use the same washer for this angle in any installation method, including floor and ceiling installations. For example, use the same washer for 10° in both a floor installation with the angle of − 10° and a ceiling installation with the angle of + 10°.
- When you use a curved screen (or a screen with a large screen gain), determine the angle of the screen as first priority so that you can get the brightest picture. (Refer to the illustration with the curved screen in step 1 above.)
- If the angle of optical axis is changed, the projection distance also changes. Refer to the tables on pages 109 and 110 and remake your own installation plan by correcting the projection distance.

If you cannot get the optical axis using the installation plan, determine the washers to be used by the following procedure.

1 **Measure the distance (E) from the screen to the center of the green lens.**



2 **Measure the difference in height (B') between the center of the screen and the center of the green lens.**

3 **Divide B' by E.**

4 **Use the "List of washers used for non-standard installation" and determine the washers required in accordance with the corresponding value given by step 3 and the screen size.**

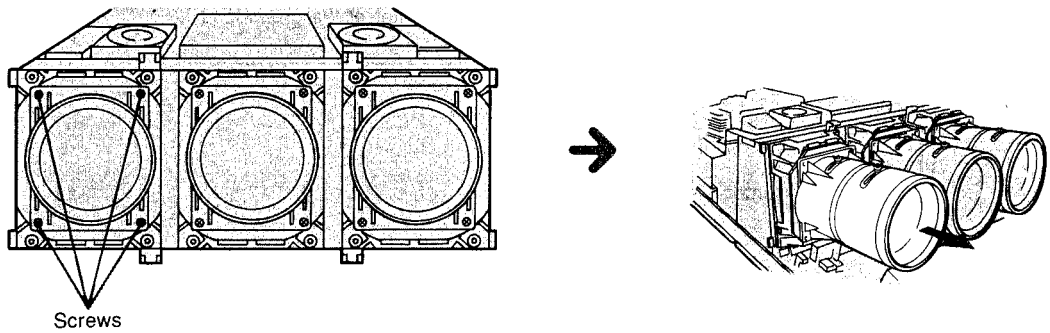
When Installation does not Comply with Standard Measurement

How to insert the washers

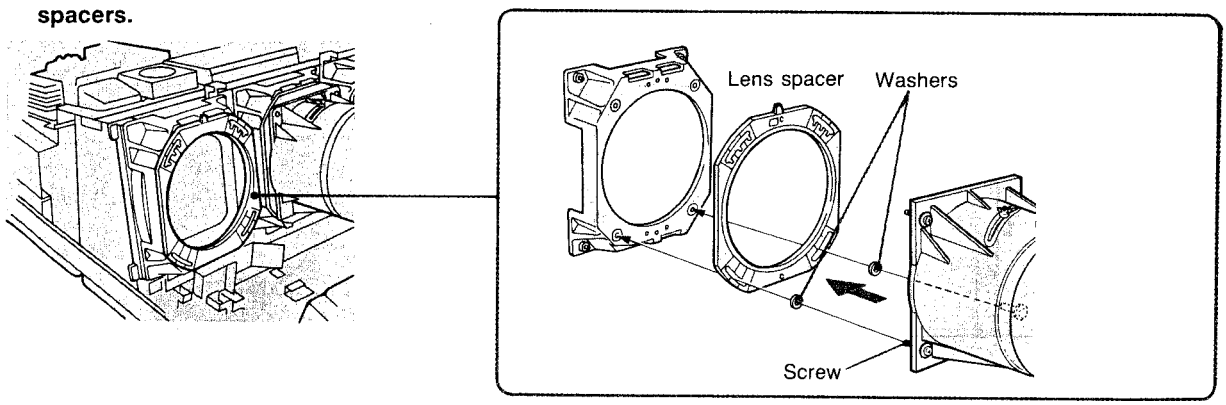
1 **Open the hood. (See page 15.)**

2 **Remove the power block and HV block. (See page 17.)**

3 **Remove the lenses from the lens supports.**
Remove the four screws of each lens and pull the lens out toward you.



4 **Mount the washers on the two screws attached at the bottom of the lens and reinstall the lenses, aligning them with the appropriate hole on the lens spacers.**



5 **Fasten the four screws for each lens.**

6 **Reinstall the power block and HV block. (See page 17.)**

7 **Reinstall the hood and top panel. (See page 16.)**

Notes

- Even if you install the projector using the rear projection, use the CRT spacers and lens spacers for front projection. (See pages 19 and 21.)
- Not to drop the washer inside the projector. If you do so, be sure to pick it up.

Notes on Screen

Screen Size

The screen size defines the size of a screen using the diagonal length in inches while the aspect ratio of the screen is 4:3. The ratio of the screen height, width, and diagonal is 3:4:5. If you use a screen whose size is not given in the table, you can calculate the screen height and width from the screen size (inches) as follows.

Height (mm) = Screen size × 25.4 × 3/5
Width (mm) = Screen size × 25.4 × 4/5

Screen size and dimensions

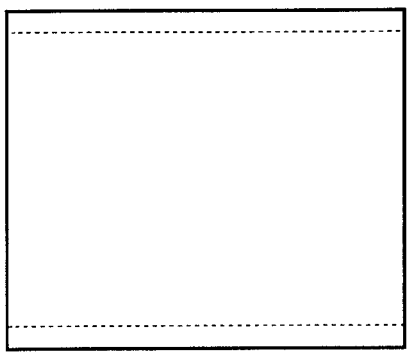
Screen size (inches) (Diagonal)	Height (mm)	Width (mm)
70	1067	1422
72	1097	1463
80	1219	1626
100	1524	2032
120	1829	2438
150	2286	3048
180	2743	3058
200	3048	4064
250	3810	5080
300	4572	6096

Screens Whose Aspect Ratio Is Not 3:4

When the height is greater

Calculate the approximate screen size from the screen height as shown below. Install the projector and screen in accordance with the screen size obtained.

– – – : Screen whose aspect ratio is 3:4

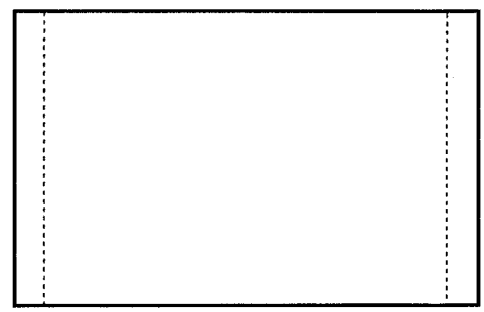


Screen size = Height (mm) × 5/3 ÷ 25.4
Example: When the screen height is 1500 mm
1500 × 5/3 ÷ 25.4 = 98 inches

When the width is greater

Calculate the approximate screen size from the screen width as shown below. Install the projector and screen in accordance with the screen size obtained.

– – – : Screen whose aspect ratio is 3:4



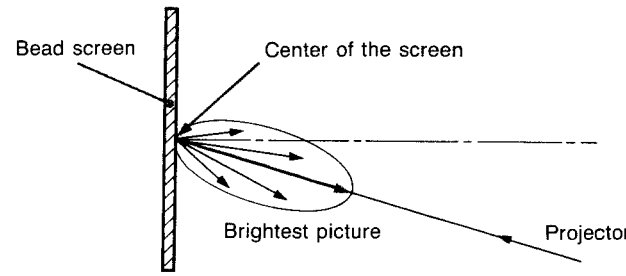
Screen size = Width (mm) × 5/4 ÷ 25.4
Example: When the screen width is 2000 mm
2000 × 5/4 ÷ 25.4 = 98 inches

Notes on Screen

Types of Screen

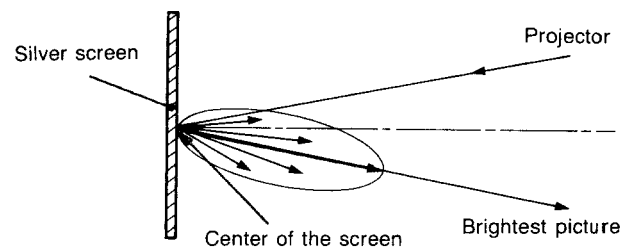
Front projection screen for floor installation

The bead screen is recommended. A screen of this type reflects the brightest light to the incidence position. The following Sony screens are bead screens:
VPS-80FH/100FH/120FH (manual screen)



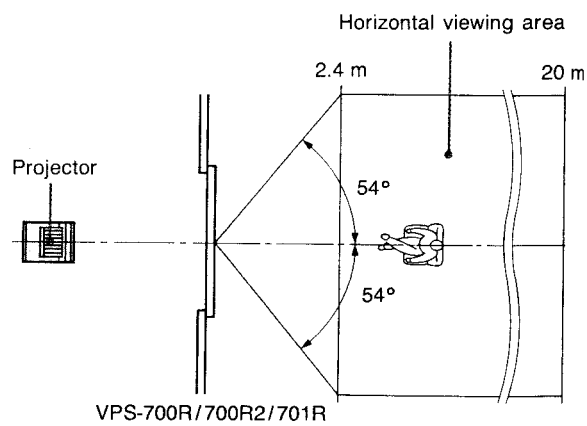
Front projection screen for ceiling installation

The silver screen is recommended. You can get a picture that is two to four times brighter.



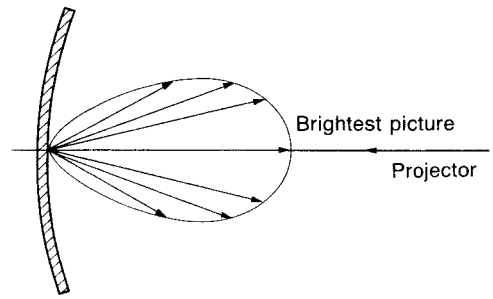
Rear projection screen

A screen manufactured using two sheets, the fresnel and lenticular, is recommended for a bright and clear full-screen picture projection. The Sony VPS-700R, VPS-700R2 and VPS-701R rear screens are this type with black stripes that can produce high quality contrast by blocking out outside light.
The illustration shows the horizontal viewing area for a screen of this type.

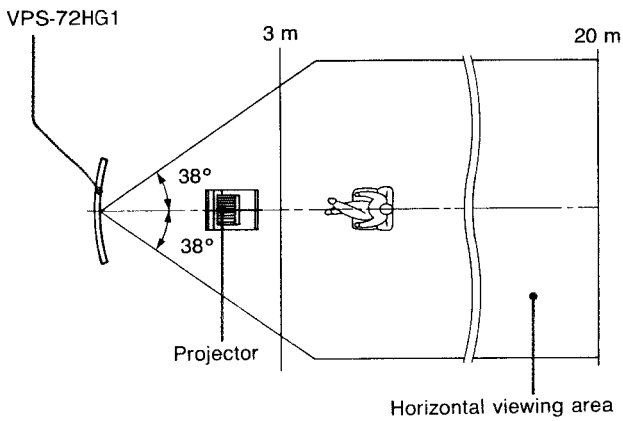


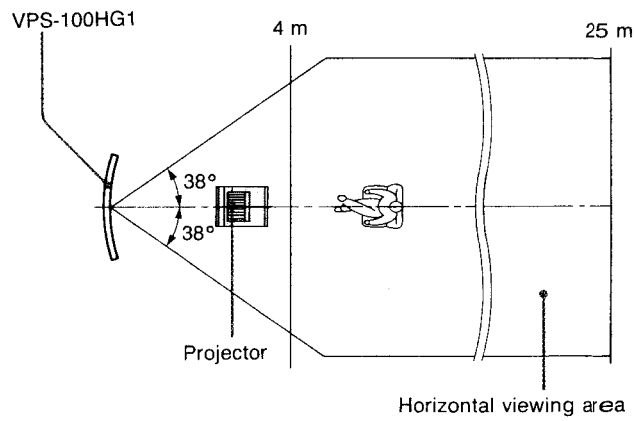
Aluminum (Curved) screen

When you install the projector in a narrow room, you can get a brighter picture using the aluminum screen for both floor and ceiling installations. An aluminum screen has a narrow directivity, resulting in a limited viewing area. However, it allows you to get a very bright picture in a narrow room. Note that a screen of this type can easily be affected by outside light and therefore requires consideration for a proper lighting system arrangement in the room. The Sony VPS-72HG1 and VPS-100HG1 screens are aluminum screens.



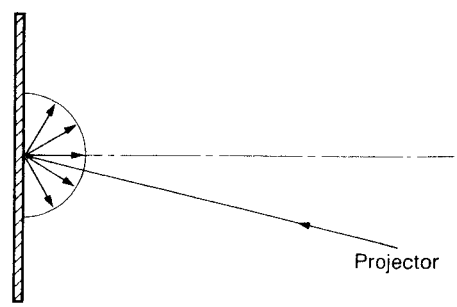
The illustrations below show the horizontal viewing area for a screen of this type.





White screen

When a number of viewers watch picture projection in a wide area, a picture that appears equally bright from all parts of the room can be obtained using the white screen for both floor and ceiling installations. Note that you will not be able to get a clear picture in this case unless the room is dark.

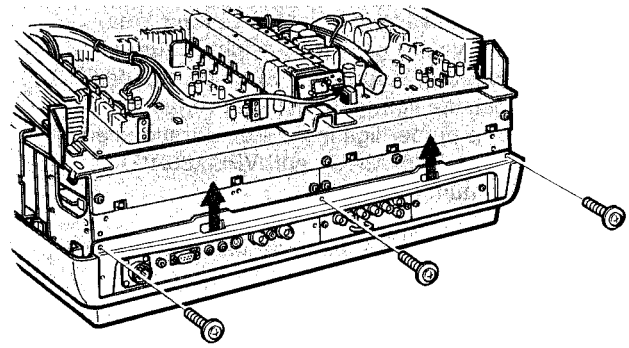


Dynamic Picture Setting

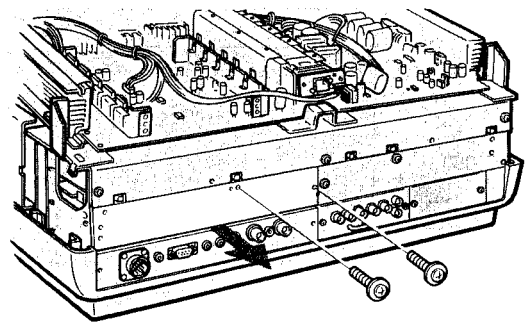
When the video signal is input, you can obtain the picture of high quality contrast by switching the DYNAMIC PIC SW on the BA board. (The switch is set to OFF at the factory.)

1 **Remove the hood. (See page 15.)**

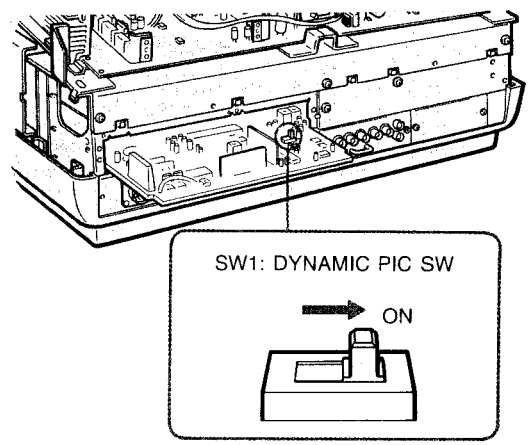
2 **Remove the three screws on the upper part of the connector panel frame to remove.**



3 **Remove the two screws on the upper cover of the connector panel and remove the cover.**



4 **Pull the BA board out toward you and set the SW1: DYNAMIC PIC SW on the board to ON.**



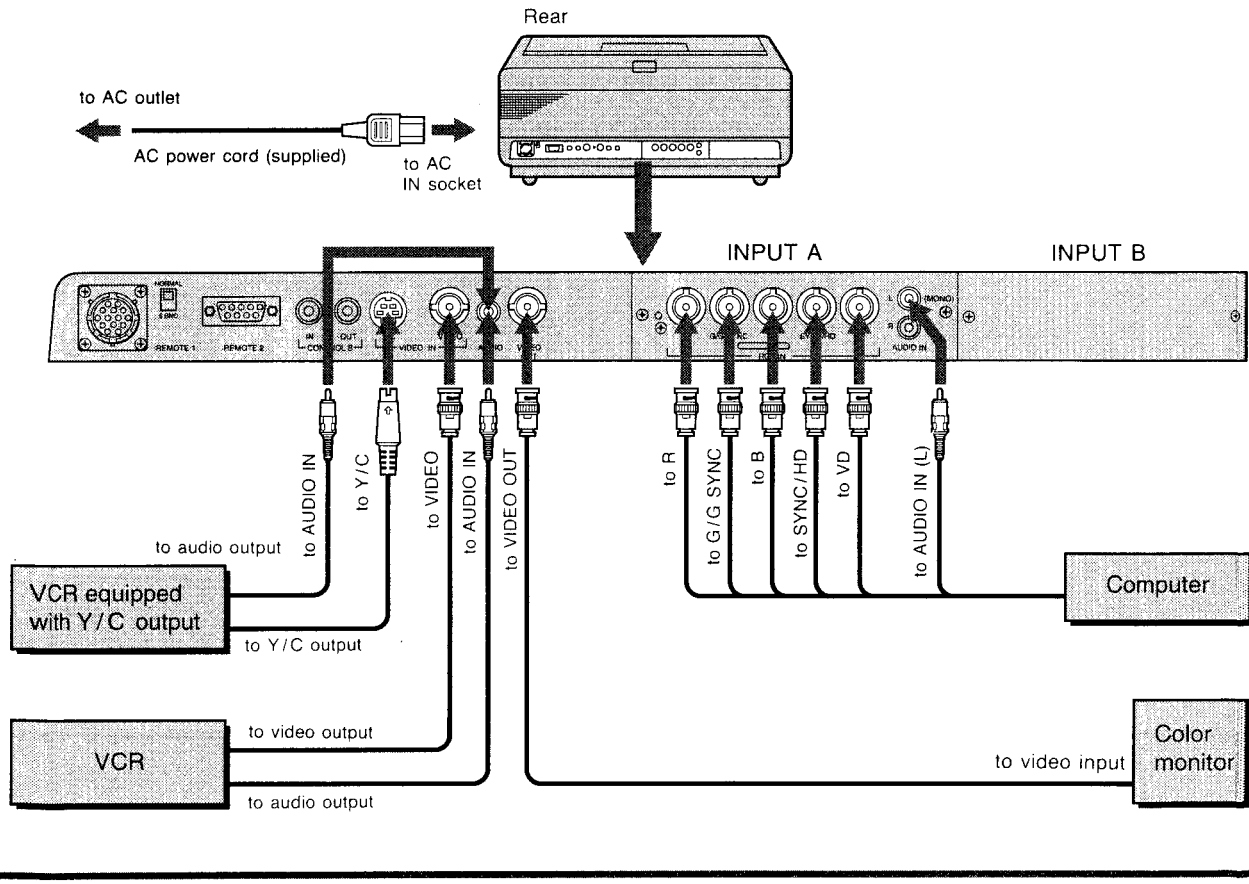
5 **Replace the parts following steps 4 to 1 in reverse.**

Connecting to the Projector Directly

You can expand the system connections by installing the optional interface board to INPUT A or B, or in combination with the examples mentioned below.

Connecting Video Equipment and a Computer Equipped with the RGB Output

When a color monitor is not connected to the computer



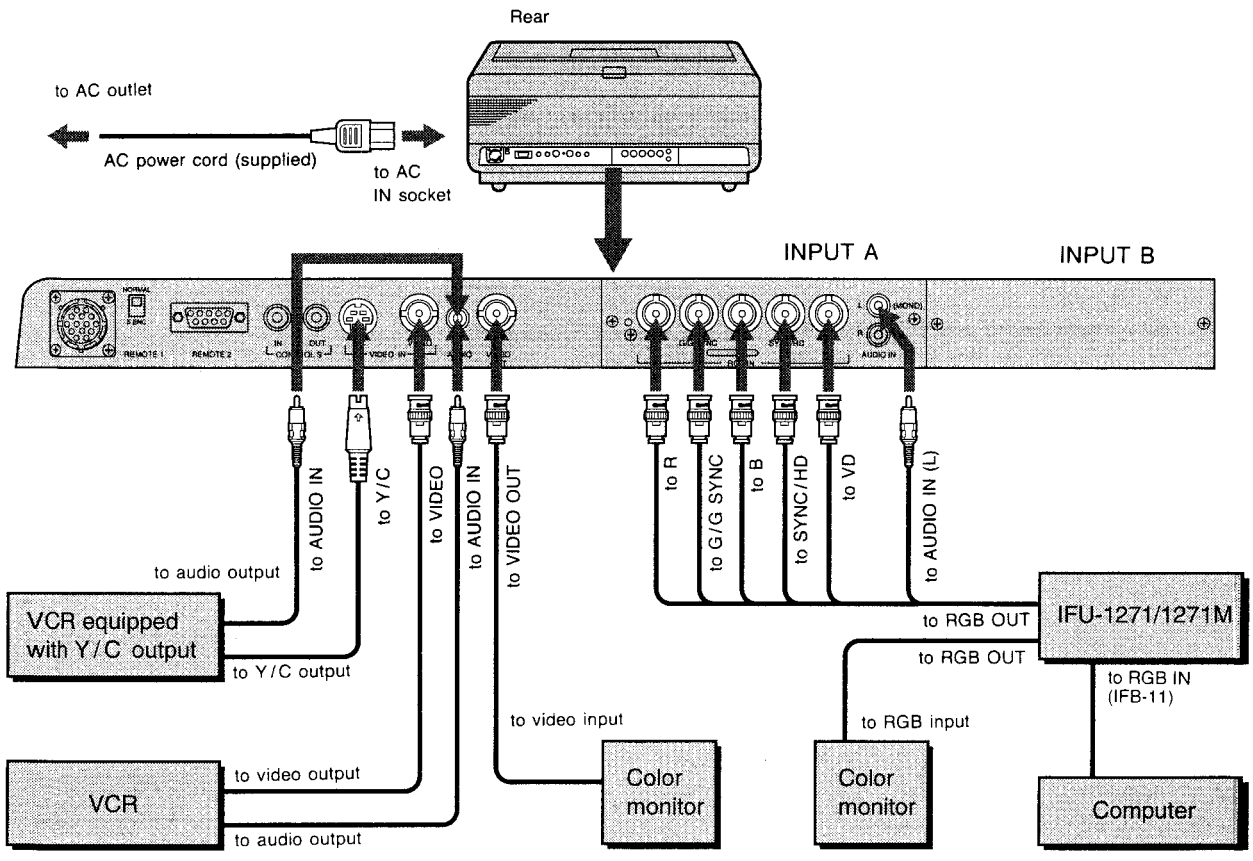
Notes

- The VIDEO connector is disconnected automatically when a cable is connected to the Y/C connector.
- The external sync signal has priority over the internal sync signal. However, when the external sync signal is incomplete, the internal sync signal has priority.

Connecting to the Projector Directly

When a color monitor is connected to the computer

Use the IFU-1271/1271M interface unit.



Connections

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Using the PC-1271/1271M switcher	41
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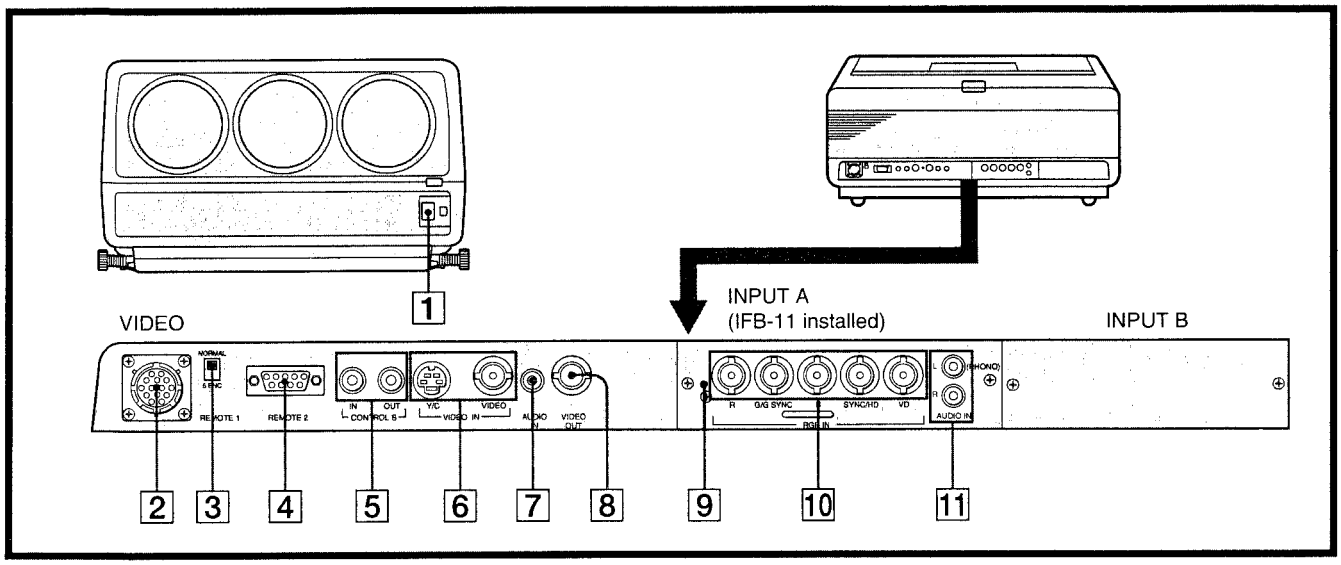
Location and Function of Connectors



1 **AC IN socket**
Connect the supplied AC power cord. This socket accepts the power supply of 120 V.

2 **REMOTE 1 connector** (14-pin, male)
Connect to the REMOTE 1 connector of the PC-1271/1271M switcher (not supplied).

3 **5BNC switch**
Normally, set to the NORMAL position.
If the picture is distorted when the RGB signal is input to the projector through the PC-1270/1270M switcher from 25 to 50 m away, set to the 5BNC position.(See page 43.)

4 **REMOTE 2 connector** (9-pin, female)
Connect the RS-422 interface for communication with the computers. Refer to the RSM-1270 (RS-422 Interface Manual) to control the projector with the RS-422.

5 **CONTROL S IN/OUT connectors** (phono type)
Connect to the CONTROL S connectors of other Sony equipment. It is then possible to control the whole system with a single Remote Commander.
CONTROL S IN: Connect to the CONTROL S OUT jack of the supplied Remote Commander to be used as a wired Commander.

6 **VIDEO IN connectors**
Y/C (4-pin): Connect to the Y/C output of a VCR.
VIDEO (BNC type): Connect to the video output of video equipment.
Note: The VIDEO connector is disconnected automatically when a cable is connected to the Y/C connector.

7 **AUDIO IN jack** (phono type)
Connect to the audio output of video equipment.

8 **VIDEO OUT connector** (BNC type)
Connect to the video input of a color monitor.
The signal input from the Y/C connector is not output from this connector.

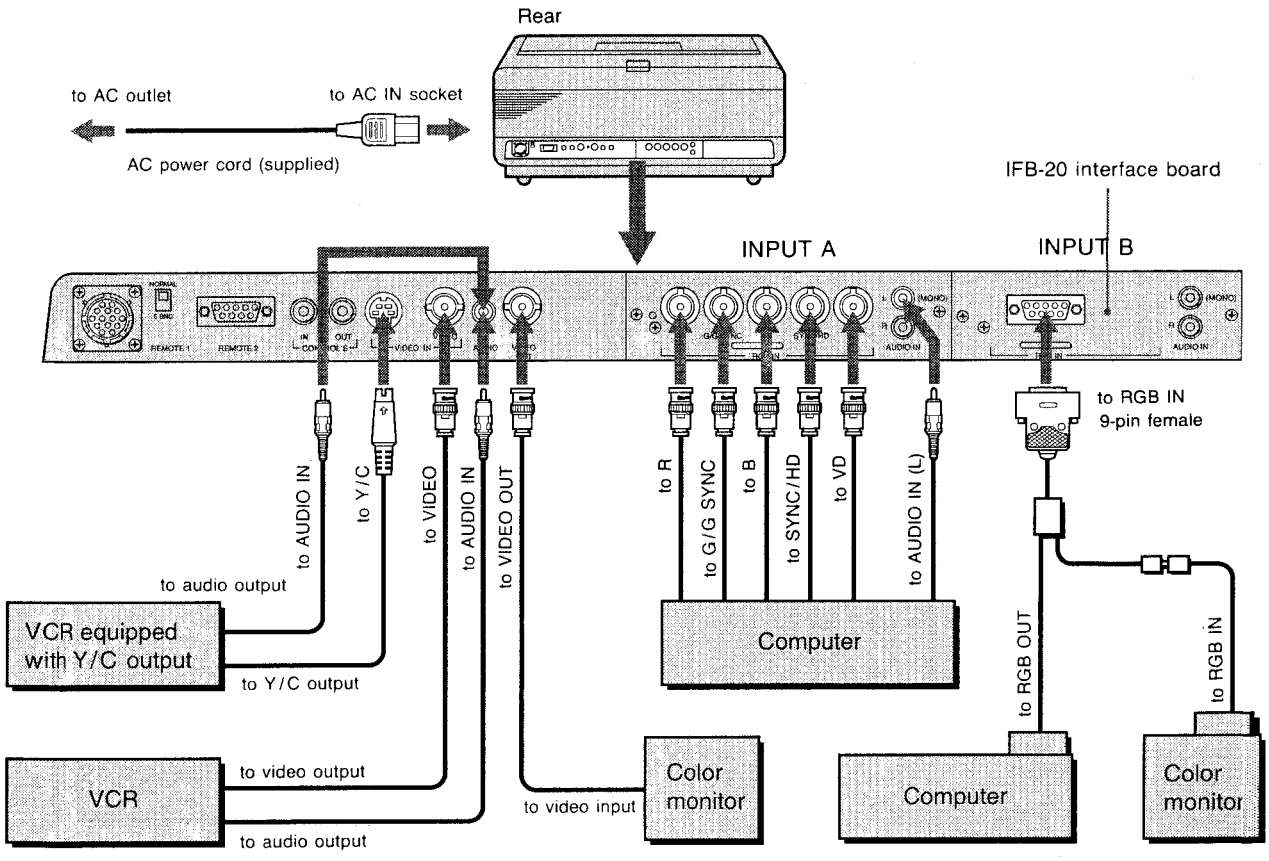
9 **Indicator**
Lights when INPUT A mode is selected.
The optional interface board is also equipped with this indicator which lights when INPUT B mode is selected.

10 **RGB IN connectors** (BNC type)
R, G/G SYNC, B, SYNC/HD, VD connectors:
Connect to the RGB outputs of a computer or a video camera.

11 **AUDIO IN L/R jacks** (phono type)
Connect to the audio outputs of a computer or a video camera connected to the RGB IN connectors.
For stereo equipment, use AUDIO L and R IN jacks.
For monaural equipment, use AUDIO L IN jack only.
Note: The projector is monaural so that sound is not reproduced in stereo.

When a computer is connected to the projector using the SIC-series connecting cable

Install the optional interface board to the INPUT A or INPUT B section.



Note
Use the standard SIC cable. Be sure not to extend the length of the cable. Otherwise, the picture may be distorted.

Installing the optional interface board

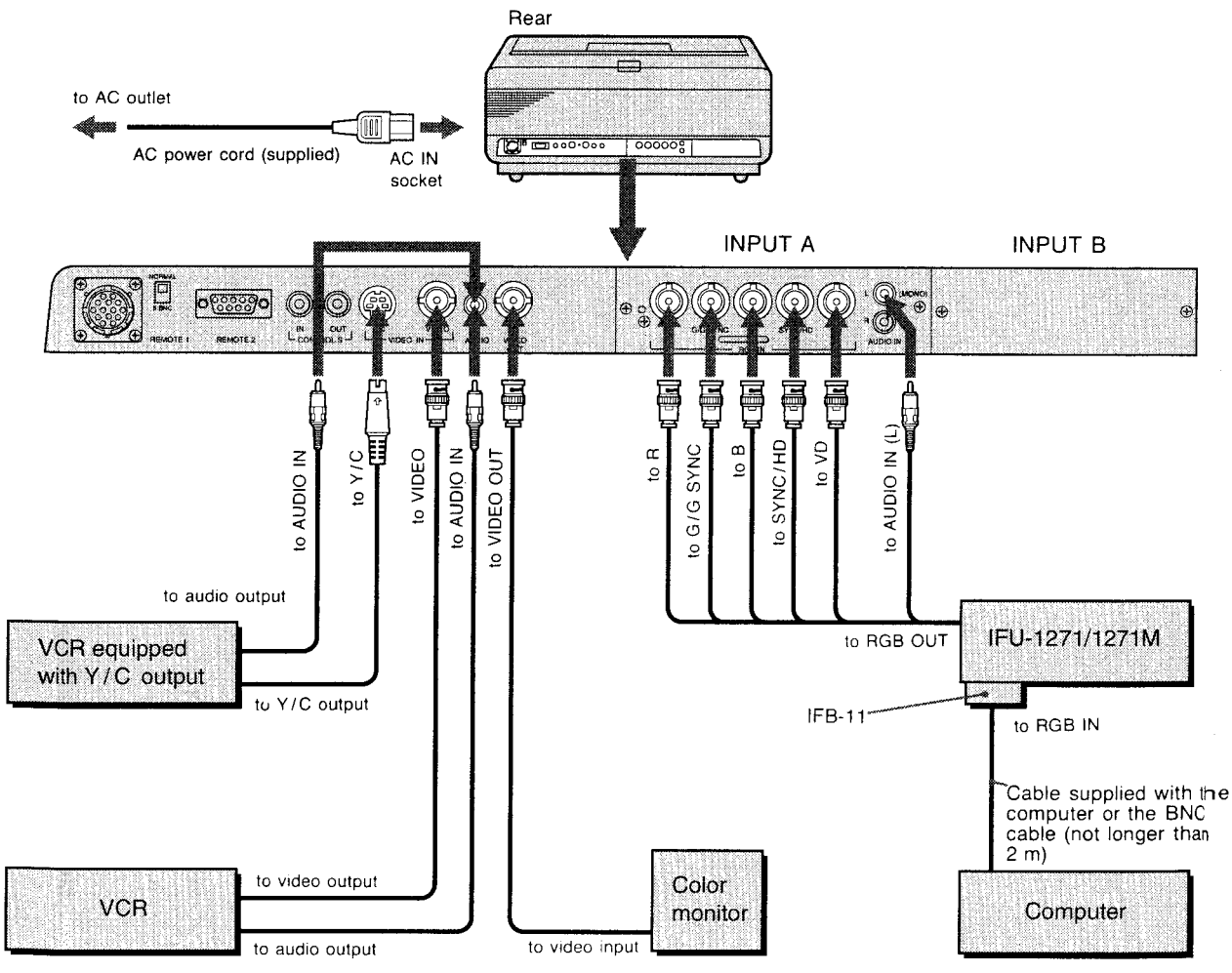
1 Loosen two screws on the INPUT A or INPUT B panel and pull out the board out towards you. (The screws are retained in the hole, to prevent their getting lost.)
2 Insert the optional interface board and tighten the screws.

Connecting When the Projector Is Away from Other Equipment

Use the IFU-1271/1271M interface unit or the PC-1271/1271M switcher (not supplied)

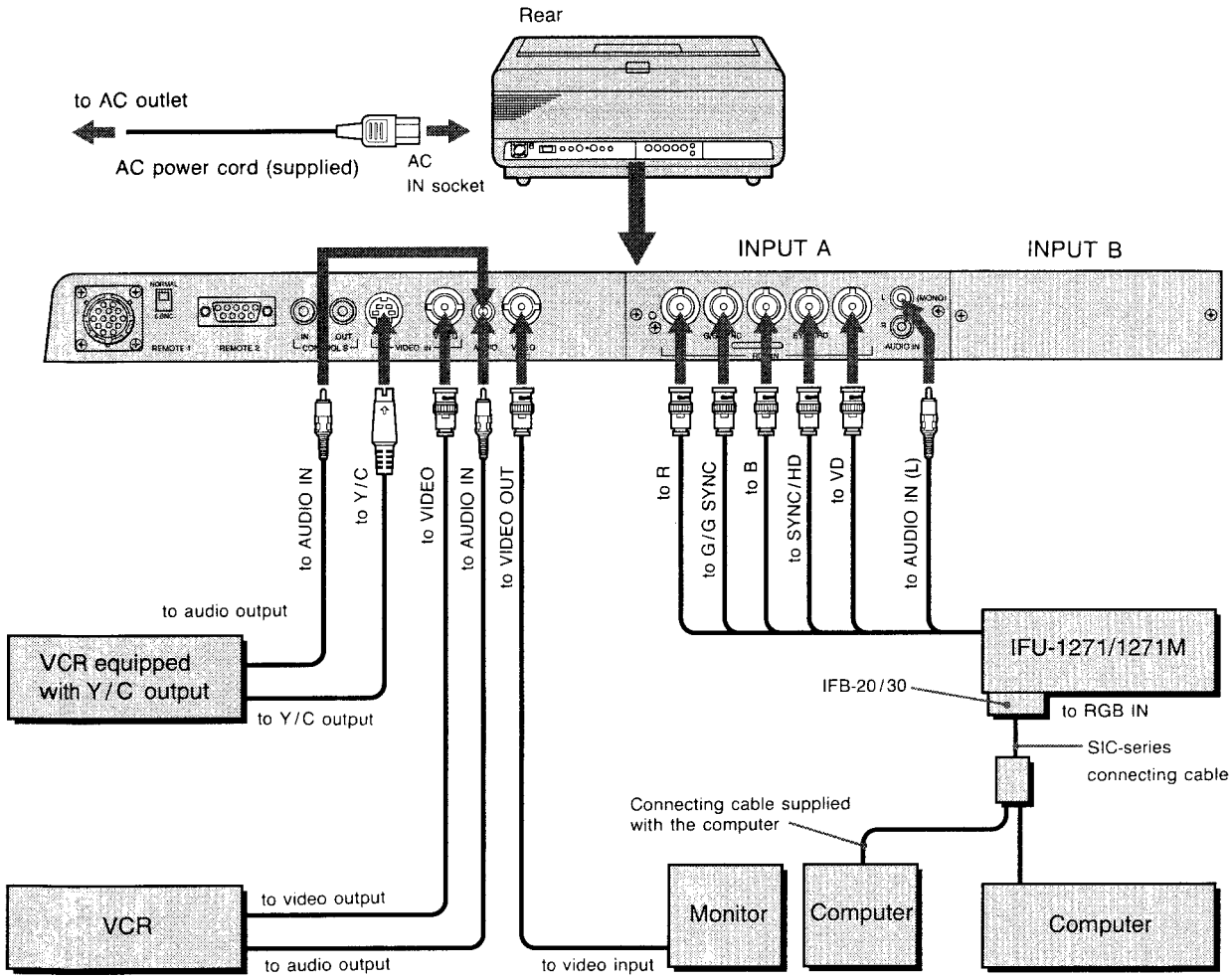
Using the IFU-1271/1271M Interface Unit

Connecting a computer using the BNC cable



• If a color monitor is used, connect the RGB input on the monitor to the RGB OUT connectors on the IFU-1271/1271M interface unit.

Connecting the computer using the SIC-series connecting cable



Use the appropriate cable for connection between the projector and the IFU-1271/1271M referring to the following table.

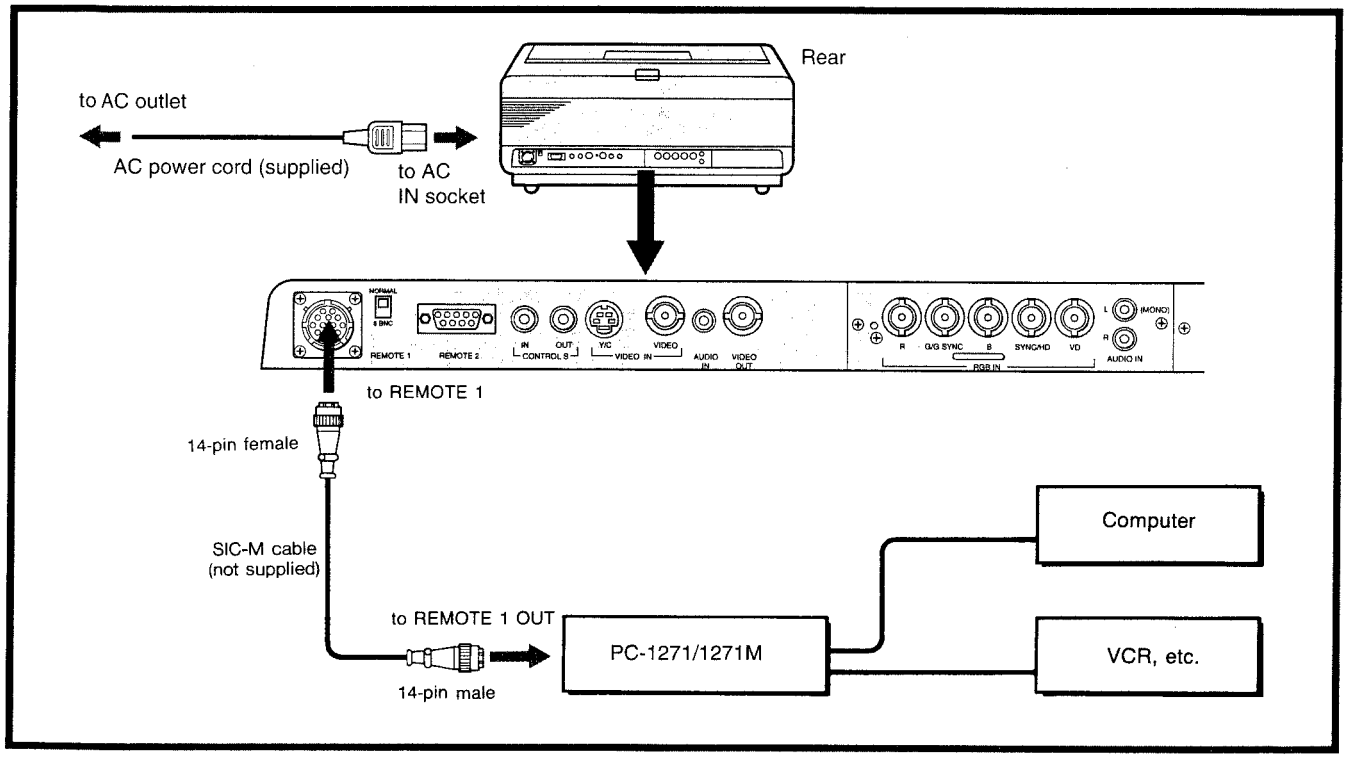
Cable length	Up to 10 m	Up to 25 m	Up to 50 m
Cable thickness	1.5C-2V (SIC-10)	3C-2V	5C-2V

Using the PC-1271/1271M Switcher

Connect the projector to the PC-1271/1271M switcher using the SIC-M connecting cable. See page 42 for connection.

Connecting More Than Four Input Sources

When you use the PC-1271/1271M switcher (not supplied), you can connect easily more than four input sources.
You can select up to 16 inputs by pressing the SWITCHER/INDEX keys on the Remote Commander or the SWITCHER keys on the control panel of the projector.



Use the appropriate cable among the following table.

1 m	2 m	5 m	10 m	15 m	25 m	50 m
—	CCQ-2BRS	CCQ-5BRS	CCQ-10BRS	—	CCQ-25BRS	CCQ-50BRS
SIC-M-1	—	SIC-M-5	—	SIC-M-15	SIC-M-25	SIC-M-50

Notes

- Insert the female and male plugs of the SIC-M cable correctly.
- The SIC-M cable can be extended to maximum 50 m.
- The equipment can be connected to the VIDEO IN and the RGB IN connectors even when the switcher is connected.

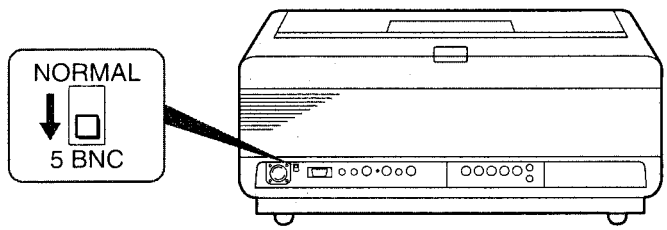
Using the SWITCHER/INDEX (SWITCHER) keys

When you use the Remote Commander, set the SWITCHER/INDEX select switch to SWITCHER. Press the number key from 1 to 8 to select the input number of the switcher. The SECOND key is used when two switchers are connected. To control the second switcher (whose SINGLE/SECOND/OTHER switch is set to SECOND), first press SECOND and then the number key.

5BNC Switch Setting

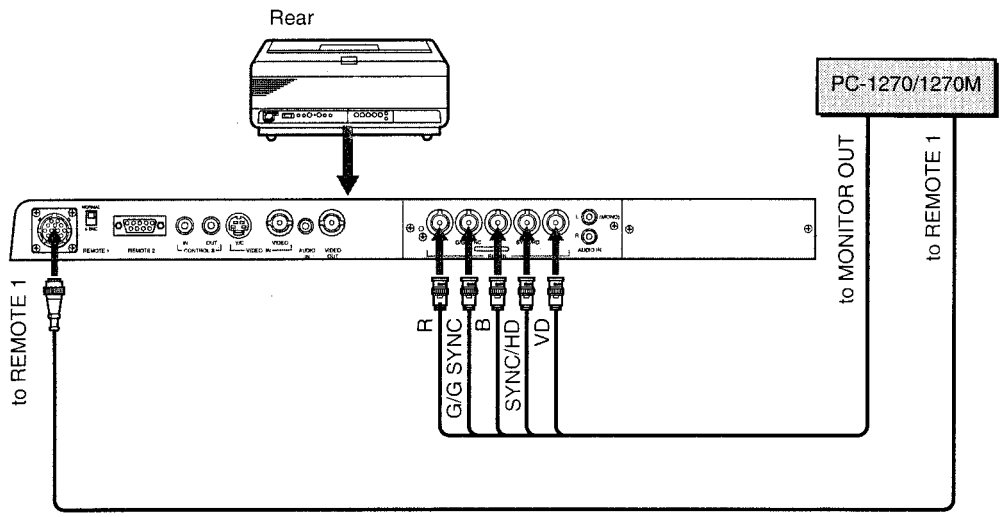
When the RGB signal is input to the projector through the PC-1270/1270M switcher from 25 to 50 m away, the picture may be distorted. In this case, first turn off the MAIN POWER switch and follow the steps below.

1 **Set the 5BNC switch on the rear panel to 5BNC.**



2 **Connect the REMOTE 1 connectors of the projector and switcher with the CCQ-BRS or SIC-M cable.**

3 **Connect the RGB IN connectors of the projector and the MONITOR OUT connectors of the switcher with five BNC cables.**



Adjustment

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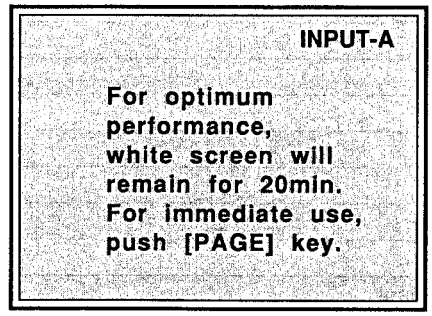
Before Starting Adjustment

Before you perform the registration adjustment, make sure to warm up the projector for 20 minutes after power ON.
For optimum performance, the projector is designed with a warm-up period of about twenty minutes after you turn on the power. During this period, it displays a white screen with the message shown below. Thirty-five seconds after the warming up starts, the message will disappear temporarily and will be subsequently displayed at 30-second intervals for 5 seconds at a time.



If you want to see the picture input from the equipment connected to the projector at once after completing the adjustment, press the PAGE key. You may set the projector for a shorter warming up period or for immediate projection of the picture input. (See page 100.)

Remote Control Operation

All of the adjustments except lens focus can be carried out by using the supplied RM-1271 Remote Commander. Normally, the adjustment keys on the Remote Commander are provided with a protection and are inoperable. Before making adjustments, cancel the protection.

Since the RM-1271 is an infrared type, it can be used without a wire. However, in order to correctly control the projector, connecting the projector and the Remote Commander with the remote control cable supplied is recommended.

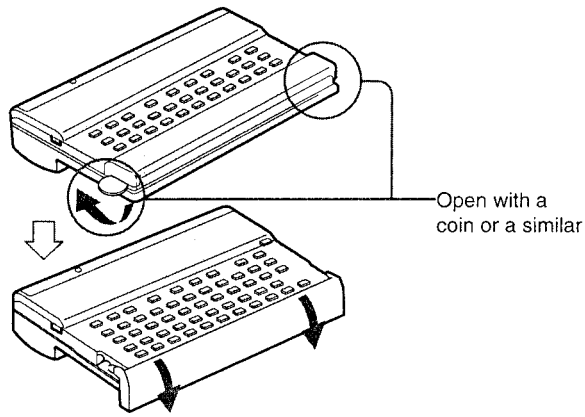
Preparation

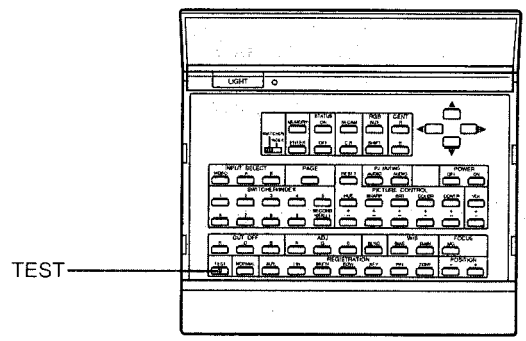
1 **Insert three size AA (R6) batteries (supplied) with the polarity lined up correctly.**
(See page 48.)

2 **Connect the Commander to the projector.** (See page 48.)

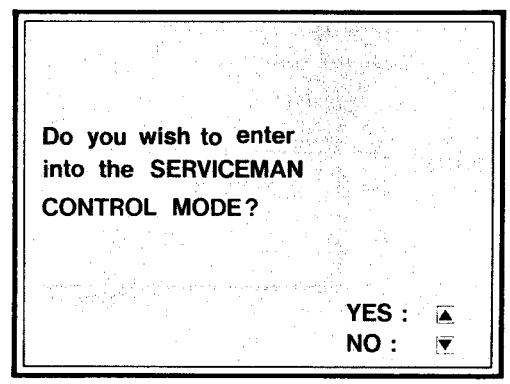
3 **Press the MAIN POWER switch on the projector and then press the POWER ON key on the Commander.**

4 **Remove the panel cover of the adjustment keys.**





5 **Keep pressing the TEST key for 5 seconds.**
The display will appear.

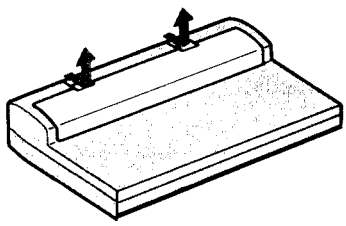


6 **Press the ▲ key.**
The protection on the adjustment keys is cancelled and the adjustment keys will function.
After adjustment, activate the protection again (see page 97).

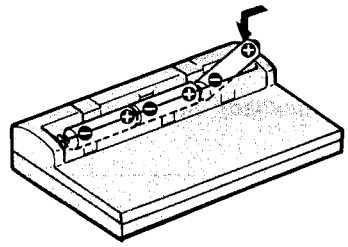
Remote Control Operation

Battery installation

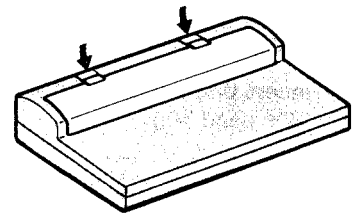
1 **Push to open the lid.**



2 **Install three AA (R6) batteries with the correct polarity.**

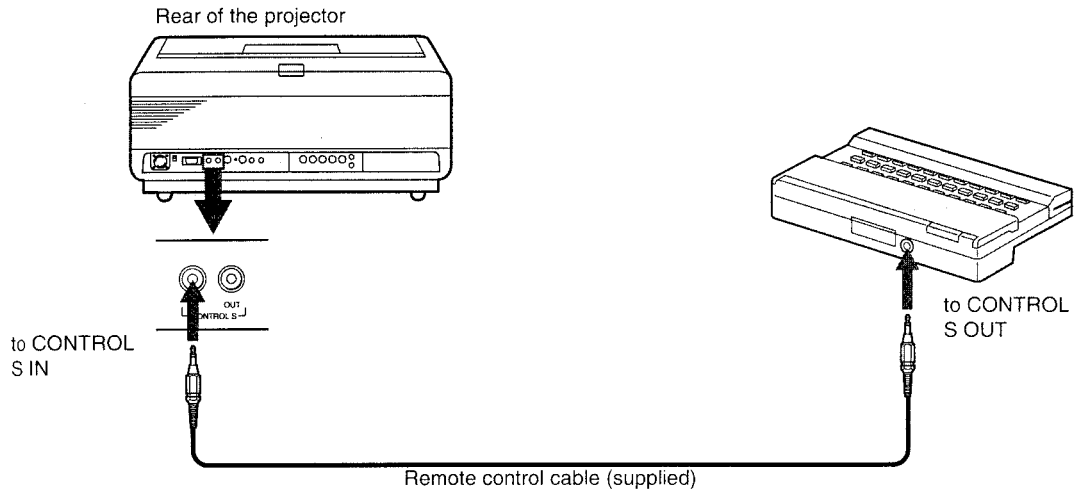


3 **Replace the lid.**



- If the projector does not operate properly, the batteries might be worn out. Replace all three of them with new batteries.
- The life of the batteries depends on frequency of usage and how often you use the LIGHT button. If they wear out quickly, replace them with new alkaline batteries.
- To avoid damage from possible battery leakage, remove the batteries when the Commander will not be used for a long time.
- Be sure that there are no obstructions between the Commander and the projector.
- Operable range is limited. The shorter the distance between the Commander and the projector, the wider the angle within which the Commander can control the projector.

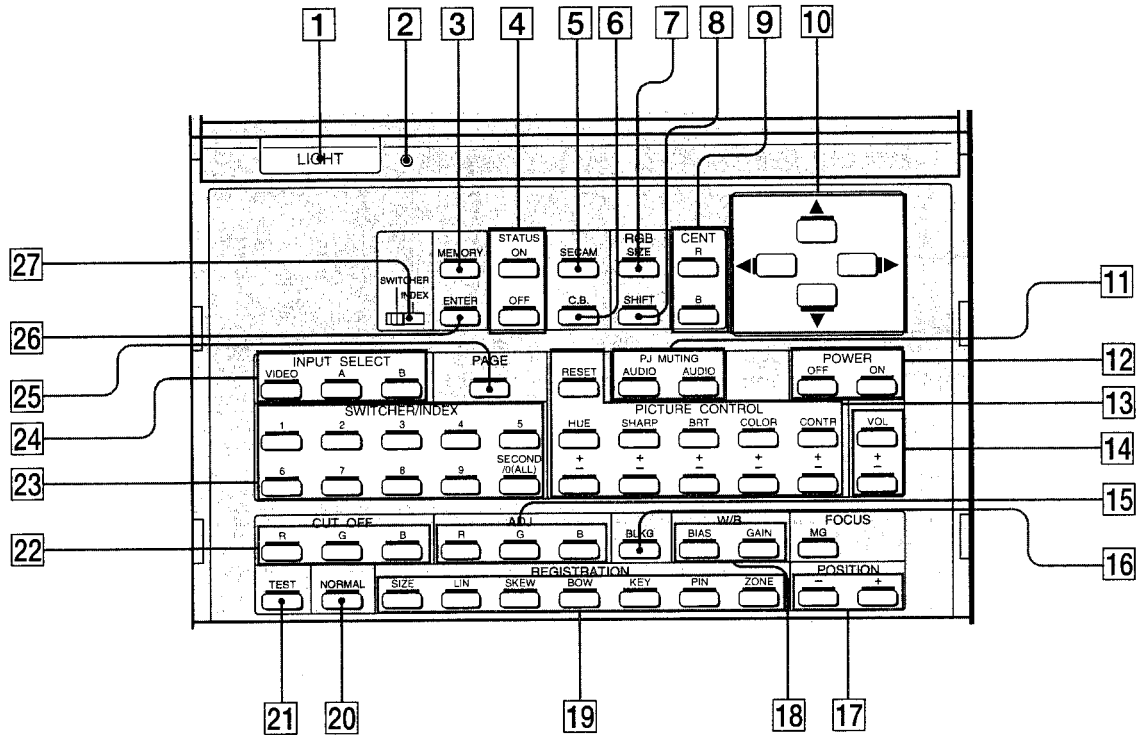
Connecting the Remote Commander to the projector



Note

When the above connection is made, the remote control detector of the projector does not function. For wireless operation, be sure to disconnect both plugs from the projector and the Commander.

Keys on the Commander



1 LIGHT button

Press to light key indicators.
If the keys are not operated within about 30 seconds, the light automatically goes out.

2 Transmission indicator

The light goes on each time a key is pressed. When the indicator does not light, replace the batteries.

3 MEMORY key

Press to store various adjustment data into memory.

4 STATUS ON/OFF key

Press **OFF** to eliminate the "On-Screen display".
Press **ON** to restore the on-screen display.
Note: The PAGE display appears even when the **OFF** key is pressed.

5 SECAM key

When SECAM signal is input to the projector and you cannot get normal color, press this key. Press again to switch over to the other standard system sources, NTSC or PAL.

6 C.B. (clear blue) key

Press to make the blue color clear in RGB mode. Press again to restore the normal condition.

7 RGB SIZE key

Press to adjust the size of the picture for the video and RGB signal inputs.
Press this key to enter the size adjustment mode. The size adjustment is performed using the four arrow keys.

◄ .... to reduce the horizontal size
► .... to expand the horizontal size
▲ .... to expand the vertical size
▼ .... to reduce the vertical size

8 RGB SHIFT key

Press to adjust the shift of the picture for the RGB signal input.
Press this key to enter the shift adjustment mode. The shift adjustment of the picture is performed using the four arrow keys. The picture shifts according to the direction of the arrow.

Note

This key does not function with the video signal input.

9 CENT R/B keys

Press to enter the centering adjustment mode of the red and blue.

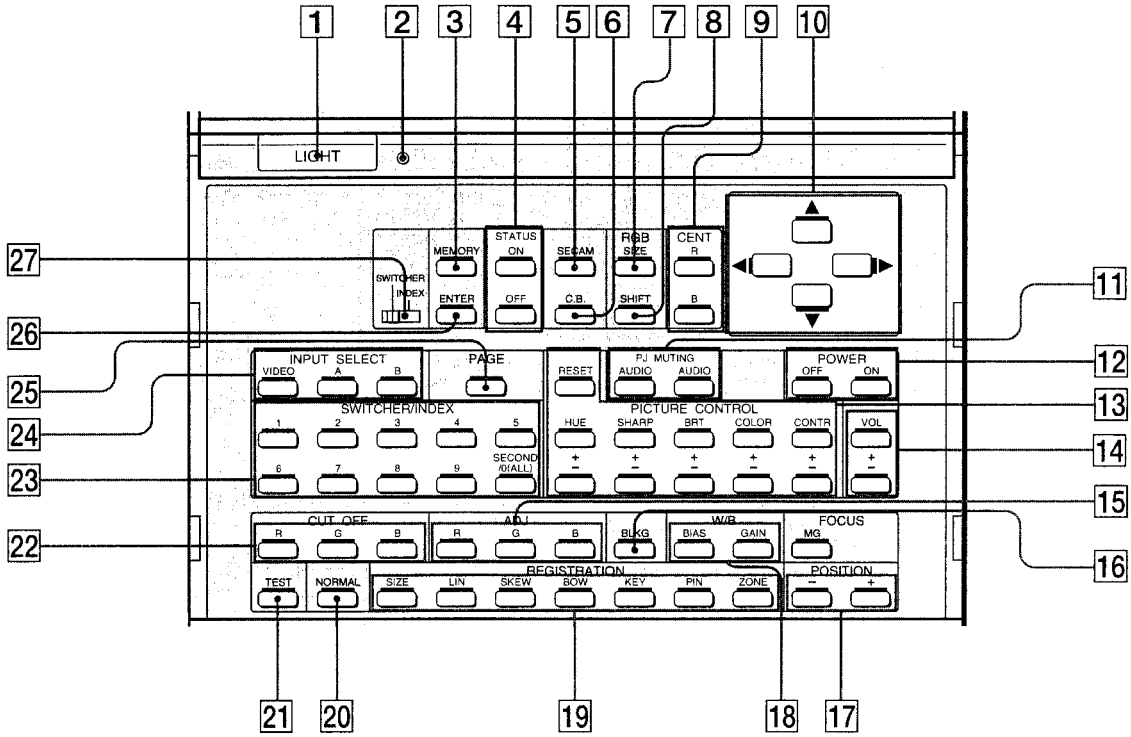
CENT R: Press to enter the red centering adjustment mode.

CENT B: Press to enter the blue centering adjustment mode.

Centering adjustments are performed using the four arrow keys.

Remote Control Operation

Keys on the Commander



10 Arrow keys
The keys are used for various adjustment functions.

11 PJ MUTING keys
PIC: Press to cut off the picture. To restore the picture, press it again or CONTR +.
AUDIO: Press to cut off the sound. To restore the sound, press it again or VOL +.

12 POWER ON/OFF keys
Press to turn on and off the projector.

13 PICTURE CONTROL keys
Press to adjust picture condition: hue, sharpness, brightness, color, and contrast. Press RESET to restore the standard levels.

14 VOL (volume) +/– keys
Press to adjust volume.
+: to increase volume
–: to decrease volume

15 ADJ R/G/B (adjust red/green/blue) keys
Press to select color to be adjusted when adjusting the registration.
R . . . Red signal
G . . . Green signal (Servicing only. If you change the green signal setting, perform the factory reset operation.) (page 94)
B . . . Blue signal

16 BLKG (blanking) key
Press to enter the blanking adjustment mode. The adjustment can be performed using the four arrow keys. For details, see page 84.

17 POSITION +/– keys
Used for zone adjustment and the blanking adjustment. For details, see pages 82 and 84.

18 W/B (white balance) key
Press to enter the white balance adjustment mode.
BIAS: For cut off adjustment
GAIN: For drive adjustment

[19] REGISTRATION keys SIZE/LIN/SKEW/BOW/KEY/PIN/ZONE

Press to select the desired item for registration adjustment. The registration adjustment is performed using the four arrow keys, ADJ keys and POSITION +/– keys. For details, see "Registration Adjustment" on page 64.

[20] NORMAL key

Press to cancel the test patterns or serviceman control mode.

[21] TEST key

Press to display the internal test patterns. Each press of this button displays 8 patterns sequentially. In registration and white balance adjustment mode, appropriate patterns will be displayed for each adjustment. For details, see "Test Patterns" on page 56.

[22] CUT OFF keys

Press to select the color to be turned off when adjusting the registration. Press again to turn on the color.

R . . . Red signal
G . . . Green signal
B . . . Blue signal

[23] SWITCHER/INDEX keys

When the SWITCHER/INDEX select switch is set to SWITCHER

When the PC-1271/1271M switcher is connected, select the input from the switcher. The SECOND key is used when two switchers are connected. To select the input from the second switcher (when the switcher's SINGLE/SECOND/OTHER switch is set to SECOND), press the number keys after pressing SECOND. Number key 9 does not operate.

When the SWITCHER/INDEX select switch is set to INDEX

These keys function when the IFB-101 interface board (not supplied) is attached and multiple projectors are connected. For details, refer to the instructions manual of the IFB-101.

[24] INPUT SELECT keys

Press to select the input signal.

VIDEO: to select the signal input from the VIDEO IN (Y/C or VIDEO) connectors
A: to select the signal input from the RGB IN connectors
B: to select the signal input from the connectors of B section (when the optional interface board is attached)

[25] PAGE key

Press to display and switch the following five on-screen displays. (On PAGE 1, 2, 3, and 5, adjustment can also be done.)

PAGE 1: Displays STATUS ON/OFF, PIC MUTING ON/OFF, AUDIO MUTING ON/OFF, CLEAR BLUE ON/OFF, and SECAM ON/OFF.
PAGE 2: Displays the picture conditions; contrast, color, brightness, sharpness and hue and volume level.
PAGE 3: Displays the color temperature level, clamp setting and vertical shift range.
PAGE 4: Displays the input signal conditions; fH, fV, H/C-sync, V-sync, Sync on Green, input signal and registration memory block assignment.
PAGE 5: Displays the current use time of each cathode-ray tube (CRT) and the baud rate setting for communicating via the RS-422.

For details, see "PAGE Displays" on page 52.

[26] ENTER key

This key functions when the IFB-101 interface board (not supplied) is attached and multiple projectors are connected. For details, refer to the instructions manual of the IFB-101.

[27] SWITCHER/INDEX select switch

Selects the SWITCHER/INDEX key function. When using as the switcher input selector, set to SWITCHER. When attaching the IFB-101 interface board at the rear of the projector and controlling multiple projectors, set to INDEX.

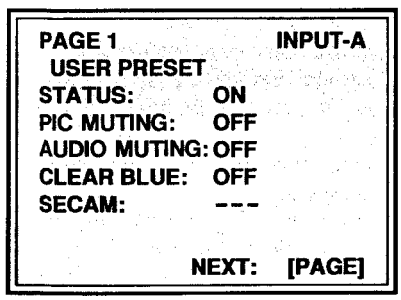
Adjustment Displays and Test Patterns

PAGE Displays

Press the PAGE key to display the following five on-screen displays. Adjustment can also be done on PAGE 1, 2, 3, and 5.
The displays will switch as follows every time the PAGE key is pressed:

PAGE 1 → PAGE 2 → PAGE 3 → PAGE 4 → PAGE 5
↑ Original screen ←

PAGE 1



STATUS: ON/OFF The setting is stored even if the power is turned off. When on-screen display does not appear, check that STATUS ON is displayed.

PIC MUTING: ON/OFF Whenever the power is turned on, PIC MUTING is set to OFF. When sound is heard but no picture is displayed, check if PIC MUTING is set to ON.

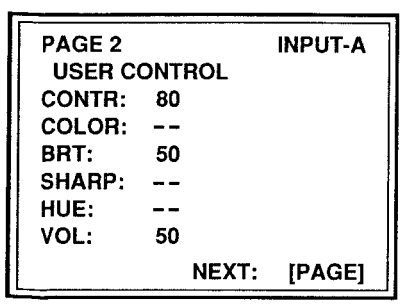
AUDIO MUTING: ON/OFF Whenever the power is turned on, AUDIO MUTING is set to OFF. When the picture is seen but no sound is heard, check if AUDIO MUTING is set to ON.

CLEAR BLUE: ON/OFF The setting can be changed for each input signal which differs in any of the items indicated in PAGE 4.

SECAM: ON/OFF When the PAL color signal is projected with this item set to ON, the picture is displayed in black and white.
Make sure to set to OFF when the SECAM color source is not connected.

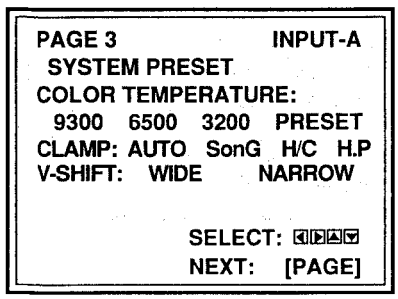
"---" indicates that the control does not function with the current input signal.
To change the settings, adjust with appropriate keys.

PAGE 2



The picture conditions; contrast, color, brightness, sharpness, hue and volume level are displayed. The levels can be changed independently for the signal input from different input connectors. (You can check from the message displayed in the upper right corner of the screen). "--" indicates that the control does not function with the current input signal. (In this case, the input signal is RGB.)
To change the levels, adjust with the PICTURE CONTROL and VOL keys.

PAGE 3



The color temperature, clamp and V-shift adjustment mode settings are displayed.
The selected item blinks in green.
To change the setting, adjust by pressing ◀, ▶, ▲, and ▼ keys.

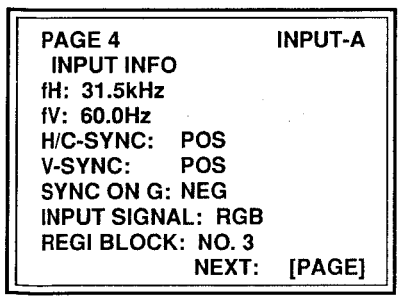
COLOR TEMPERATURE: 9300/6500/3200/PRESET
Normally, set to "6500". If you want to make white color bluish, set COLOR TEMPERATURE to 9300, and if you want to make white color reddish, set to 3200.
Select PRESET to adjust the white balance if you want to make the color of a particular input signal (ex. HDTV system picture) uniform to that of the color monitor connected to the projector. For details, see "White balance adjustment" on page 92.
The color temperature of the projector is preset to 6500 at the factory only for a video input signal.

V-SHIFT: WIDE/NARROW
Normally set to WIDE. When some particular RGB signal sources are connected, the picture may be distorted vertically. In such case, set to NARROW. Adjustable range in the lower direction will become narrow.

For details of the clamp setting, see "If the luminance of the picture is incorrect — clamp setting" on page 93.

Note
"CLAMP" and "V-SHIFT" are not displayed when the input mode is VIDEO.

PAGE 4



The signal input conditions are displayed.
f_H: Horizontal frequency of the input signal
f_V: Vertical frequency of the input signal

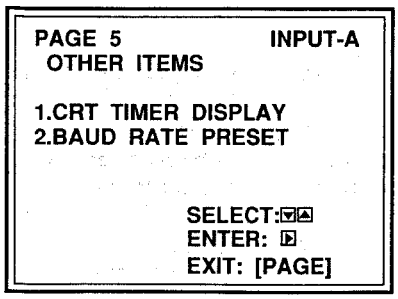
H/C-SYNC: Polarity of the H/C-SYNC
V-SYNC: Polarity of the V-SYNC
SYNC ON G: Polarity of the SYNC on the Green
} **POS:** positive, **NEG:** negative, ---: no input

When POS (NEG) is displayed in green:
The picture is being projected using its sync signal.
When POS (NEG) is displayed in white:
The picture is being projected without using its sync signal.

INPUT SIGNAL: Current input signal
Y/C: S video input signal from VIDEO IN
RGB: RGB input signal
NTSC: NTSC input signal from VIDEO IN
PAL: PAL input signal from VIDEO IN
SECAM: SECAM input signal from VIDEO IN
B & W: Black and white input signal from VIDEO IN
Internal oscillation: Internal oscillation mode (No signal is input)

REGI BLOCK: The registration memory block number in which the input signal is assigned. (See the table on page 86.)

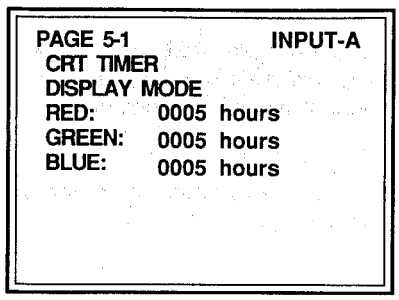
PAGE 5



The two different pages, the current use time and the baud rate* setting can be selected to display.
The selected item blinks in green. To display either page, select the item with the ▼ and ▲ keys, and then press the ► key.

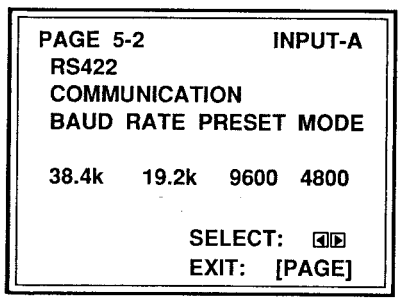
* The baud rate means the signaling speed when the RS-422 is connected to the projector. The baud rate of the projector should be set to a rate equal to that of the connected computer.

When the "1. CRT TIMER DISPLAY" is selected



The use time of each cathode-ray tube is displayed in one-hour intervals.
RED: Use time of red CRT
GREEN: Use time of green CRT
BLUE: Use time of blue CRT

When the "2. BAUD RATE PRESET" is selected



The baud rate setting for interactive communication with the RS-422 is displayed.
The selected item blinks in green. To change the setting, press the ◄ and ► keys.

Note
When using with the Sony VPX-010 projector auto set-up system, set to 38.4k.

Messages on the screen

Color of message

Four colors are used in the screen display.

Color	Meaning
Green	Function and condition, item being selected on PAGE display
Cyan	Operation guide and messages
Yellow	Caution and error messages
White	Item being adjusted, item not being selected on PAGE display

Error message

When an error occurs, the following messages will be displayed.

Message	Meaning
Not applicable!	The control does not function with the current input.
PIC MUTING	PIC MUTING is set to ON. If you want to adjust the picture controls, press PJ MUTING PIC key to cancel the PIC MUTING mode.
Overflow!	Adjustable range had reached its limit.
NO INPUT	No signal is input in the selected input mode.
OFF	STATUS is set to OFF to clear the on-screen display. To restore the on-screen display, press STATUS ON.

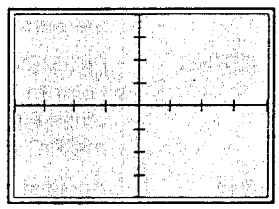
Adjustment Displays and Test Patterns

Test Patterns

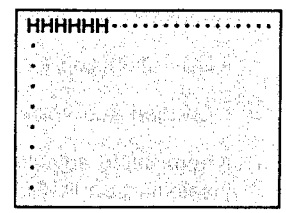
In each adjustment mode, an appropriate test pattern will be displayed. In addition, other test patterns can be displayed by pressing the TEST key.

All the test patterns

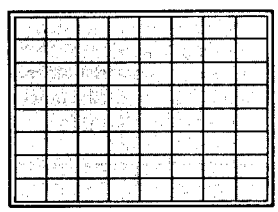
Cross hair



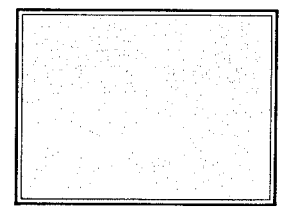
H



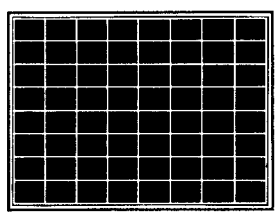
Hatch (9 × 9)



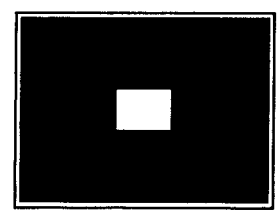
White



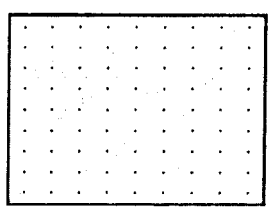
Hatch (reverse)



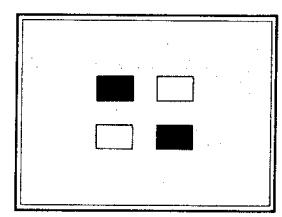
Window



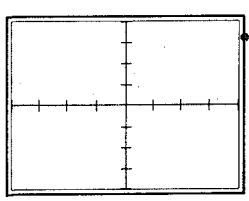
Dot



PLUGE*



*PLUGE = Picture Line Up Generating Equipment



The outside bold line stands for the edge of the screen.

Test patterns in each mode

Mode		With one press of TEST key, test patterns change as follows.	
Normal		Cross hair → Hatch (9 × 9) → Hatch reverse → Dot → H → White → Window → PLUGE → Cross hair	
Registration	SIZE LIN SKEW BOW	Cross hair ⟷ Hatch (9 × 9)	Select the desired one.
	KEY PIN	Hatch (5 × 5) ⟷ Hatch (9 × 9)	Select the desired one.
	ZONE	Hatch (9 × 9) + Cursor	
White balance	BIAS	PLUGE	
	GAIN	Window ⟷ White	
BLKG		Hatch (9 × 9)	
CENT RGB		Cross hair ⟷ Hatch (5 × 5)	Select the desired one.

Adjustment Procedures

Perform each adjustment with the supplied Remote Commander, first with no input source connected.
After the adjustment, save the data.
Next, perform the fine adjustments for each input signal.

Follow the steps below.

1 **Prepare the Remote Commander.** (page 47)

2 **Perform adjustments with no input.**
- Focus
- Registration

3 **Save the adjustment data as standard data.**

4 **Perform the fine adjustments for each input signal.**
- Centering
- Registration
- RGB size and shift
- Blanking
- White balance

5 **Save the adjustment data.**

6 **Activate the protection on the Remote Commander again.**

7 **Adjust the picture.**

Lens Focus Adjustment

Procedure

1 **Remove the top panel.** page 60

2 **Set the Remote Commander to the serviceman adjustment mode by removing the panel cover on the adjustment keys.** page 47

3 **Select the input with no input source connected.** (NO INPUT mode) page 60

4 **Display the H-pattern.** page 61

5 **Set both CONTR (contrast) and BRT (brightness) levels to 50.** page 61

6 **Adjust the green focus.** page 61

7 **Adjust the red focus.** page 62

8 **Adjust the blue focus.** page 62

9 **Adjust the electric focus.** (If necessary) page 63

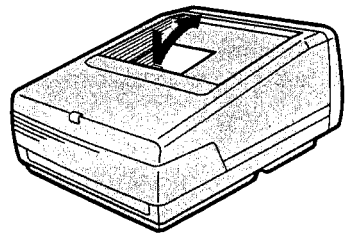
Proceed to the registration adjustment.

Lens Focus Adjustment

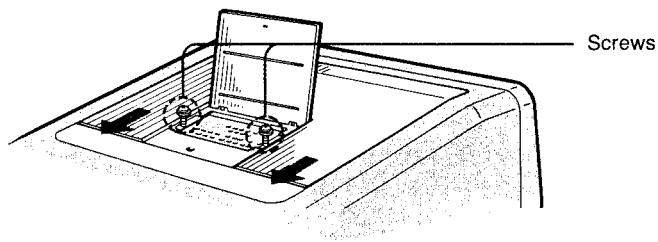
Adjustment

1 **Remove the top panel.**

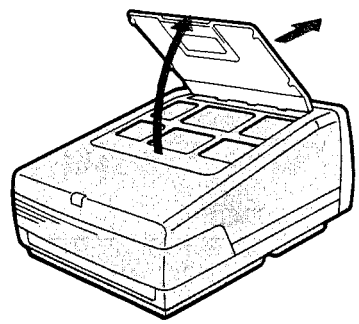
① Push the part marked "PUSH" on the control panel cover to open.



② Loosen two screws (black M4 x 16) of the control panel and slide the top panel in the direction of the arrow.

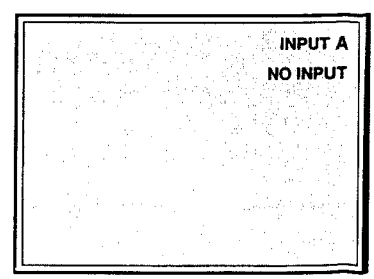


③ Open the top panel towards the lens section to detach.

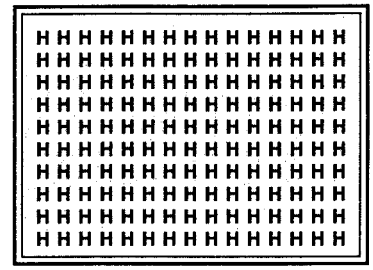


2 **Make the adjustment keys on the Remote Commander operable.**
(See page 47.)

3 **Select the input with no input source connected.** (NO INPUT mode)
Press the INPUT SELECT A, B or VIDEO key. Or, set the SWITCHER/INDEX select switch to SWITCHER and then from among the number keys from 1 to 8, press a key with no input source connected.
Make sure that "NO INPUT" is displayed on the screen.



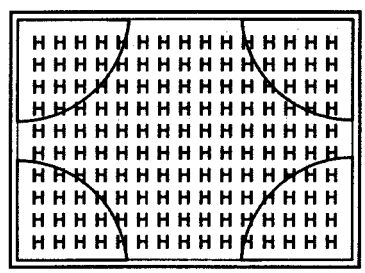
4 **Press the TEST key on the Commander five times.**
An H-pattern will appear.



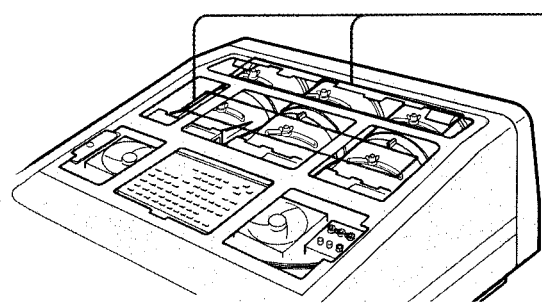
5 **Press PICTURE CONTROL CONTR and BRT +/– keys to set their adjustment levels to 50.**

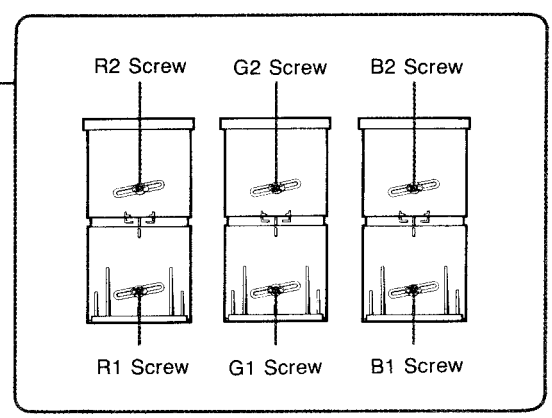
6 **Adjust the green focus.**

① Press the CUT OFF R and B keys to display the green signal only.
② Adjust the center-focus.
Loosen the G1 screw, slide it so that the letters H at the center of the screen is in optimum focus, and then tighten the screw.
③ Adjust the corner-focus.
Loosen the G2 screw, slide it so that the letter H at the four corners (pay attention to the areas ▱ in the illustration) are equally in focus, and then tighten the screw.



④ Repeat steps ② and ③ two or three times.





Lens focus adjustment hint
The letter H is made up of dots. If it is in focus, the dots will be clearly seen as in the illustration.

Lens Focus Adjustment

7 **Adjust the red focus.**

① Press the CUT OFF G and B keys to display the red signal only.
② Adjust the red center-focus using the R1 screw following the same procedure as for the green focus.
③ Adjust the red corner-focus using the R2 screw following the same procedure as for the green focus.
④ Repeat steps ② and ③ two or three times.

8 **Adjust the blue focus.**

① Press the CUT OFF G and R keys to display the blue signal only.
② Adjust the blue center-focus using the B1 screw following the same procedure as for the green focus.
③ Adjust the blue corner-focus using the B2 screw following the same procedure as for the green focus.
④ Repeat steps ② and ③ two or three times.

The lens focus adjustment is complete.
Proceed to the registration adjustment. (page 64)

Notes

- When you cannot see the letter H clearly as seen in step 6 with the green and red focus adjustments, perform the electric focus adjustment. (page 63)
- If the focus of the upper, lower, left and right parts is not equal, check that the installation of the projector is correct.

Electric Focus Adjustment

When you cannot obtain sharp focus with the lens focus adjustment, perform only the green and red electric focus adjustments using the controls as shown in the illustration.

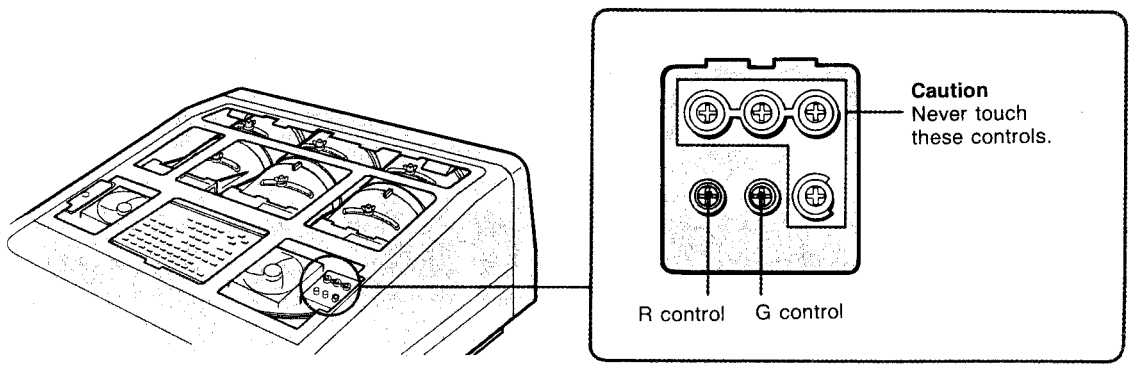
1 **Remove the top panel.**
(See page 60.)

2 **Press the TEST key five times to display the H-pattern.**

3 **Press the PICTURE CONTROL RESET key to reset the CONTR level to 80 and the BRT level to 50.**

4 **Adjust the green electric focus.**

① Press the CUT OFF R and B keys to display the green signal only.
② Adjust focus by turning the G control.



5 **Adjust the red electric focus.**

① Press the CUT OFF G and B keys to display the red signal only.
② Adjust focus by turning the R control.

Hint 1
Since the focus adjustment level varies with brightness of the screen, set PIC CONTROL to the factory preset levels.

Hint 2
In the case of a high-resolution picture, when it is projected and the adjustment is made, even better focusing is possible. In this case, also, set PIC CONTROL to the factory preset levels.

Blue electric focus adjustment
The blue electric focus is adjusted at the factory. If it is further adjusted, the white balance has to be also readjusted. Never adjust the blue electric focus.

Registration Adjustment

Display the test pattern on the screen and adjust the registration.
Perform green, red and blue adjustments in this order to converge the three colors.

Procedure

1 **Mark the center of the screen.** — See page 67

↓

2 **Set the Remote Commander to the serviceman adjustment mode.** — 47

↓

3 **Select the input with no input source connected.**
(NO INPUT mode) — 67

↓

4 **Reset the data to the factory preset level.**
(Only when the adjustment data has been saved before) — 95

↓

5 **Check that the shift of a test pattern is correct.**
(Only when the washers were inserted) — 67

↓

6 **Release blanking adjustment.** — 68

↓

7 **Adjust the green registration.** — 69

① Centering adjustment
② SIZE and LIN adjustments
③ SKEW and BOW adjustments
④ KEY and PIN adjustments

↓

8 **Adjust the red registration.** — 76

① Centering adjustment
② SIZE and LIN adjustments
③ SKEW and BOW adjustments
④ KEY and PIN adjustments
⑤ ZONE adjustment

↓

9 **Adjust the blue registration.**

① Centering adjustment
② SIZE and LIN adjustments
③ SKEW and BOW adjustments
④ KEY and PIN adjustments
⑤ ZONE adjustment

See page 83

↓

10 **Adjust blanking.** 84

↓

11 **Save the adjusted data as standard data.** 85

↓

12 **Perform fine adjustments for each input signal**

① Adjustment of video input signal 88
② Adjustment of RGB input signal
③ White balance adjustment

↓

13 **Activate the protection on the Remote Commander.** 97

↓

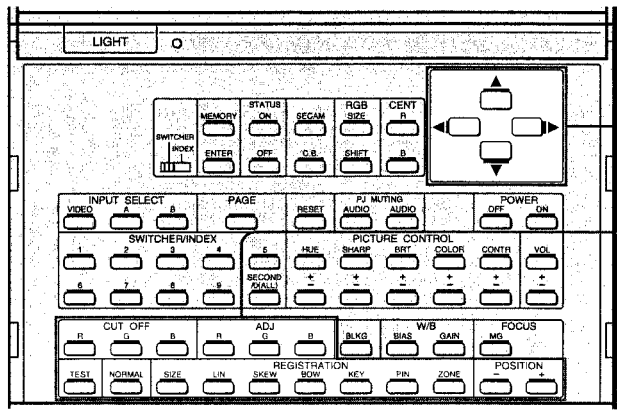
14 **Adjust the picture.** 98

↓

Complete.

Registration Adjustment

Keys for Registration Adjustment



Arrow keys

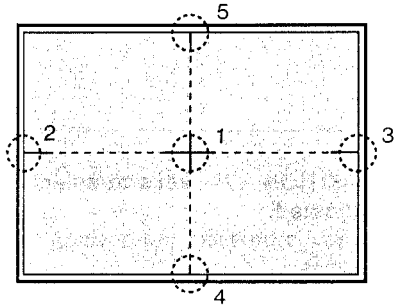
CUT OFF R/G/B keys
ADJ R/G/B (Adjust red/green/blue) keys
TEST key
NORMAL key
REGISTRATION keys
(SIZE/LIN/SKEW/BOW/KEY/PIN/ZONE)
POSITION keys

Identifying the REGISTRATION keys

Indications on the Commander	Adjustment items
SIZE	size
LIN	linearity
SKEW	skew
BOW	bow
KEY	keystone
PIN	pincushion
ZONE	centering, zone

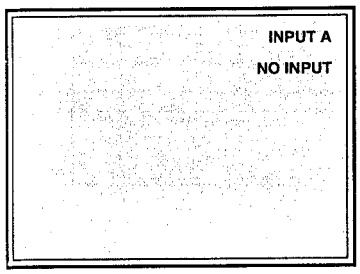
Preparation

1 **Mark the center of the screen.**
Measure the height and width of the screen to decide the center.
Marking five points as illustrated with white tape will help you adjust registration.



2 **Set the Remote Commander to the serviceman adjustment mode.**
(See page 47.)

3 **Select the input with no input source connected. (NO INPUT mode)**
Press the INPUT SELECT A, B or VIDEO key on the Remote Commander. Or, set the SWITCHER/INDEX select switch to SWITCHER and then from among the number keys from 1 to 8, press a key with no input source connected. Make sure "NO INPUT" is displayed on the screen.

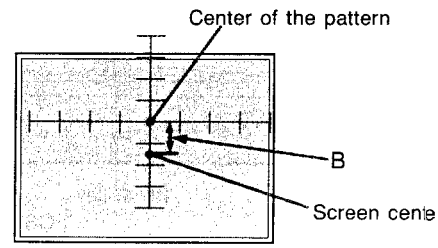


4 **Reset the standard data.**
(Only when the registration adjustment has been performed and the data has been saved before)
See page 94 for how to reset the data.

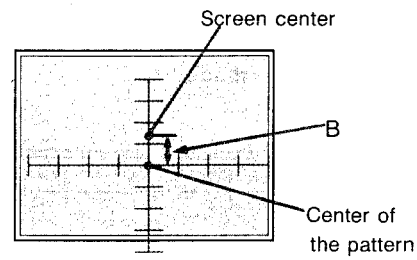
5 **If you install the projector with the washer inserted, check that the distance between the center of the screen and the center of the cross hair pattern is appropriate.**

1 Press the TEST key to display the cross hair pattern.
2 Press the ADJ G key.
3 Measure the distance (B) between the center of the screen and the center of the cross hair pattern. (See the illustrations below.)
If the distance is nearly equivalent to that given in the "List of washers used for non-standard installation" on page 106, your installation and washer insertion are correctly performed.
If the distance is not equivalent, adjust the angle of optical axis.

Floor installation



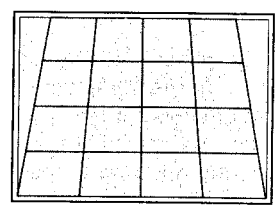
Ceiling installation



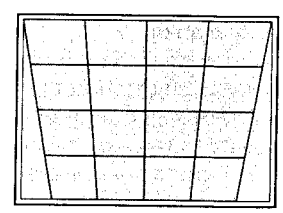
Notes

- The center of the screen and the center of the cross hair pattern can be aligned by performing the centering adjustment. (See page 69.)
- When the angle of optical axis is smaller, the hatch pattern becomes trapezoidal. Perform the keystone adjustment to correct the distortion. (See page 74.)

Floor installation



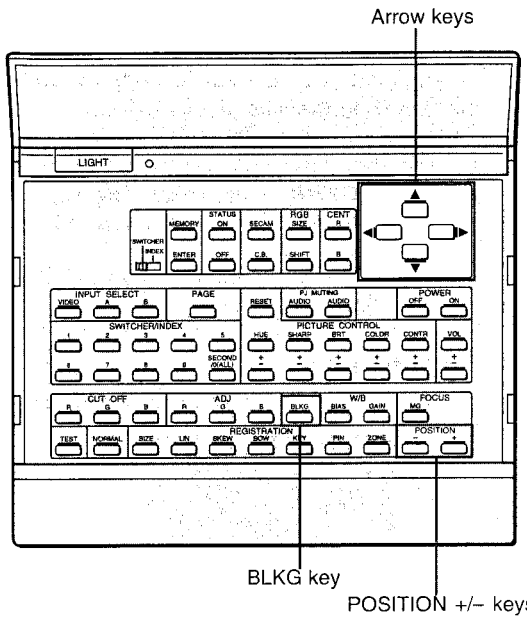
Ceiling installation



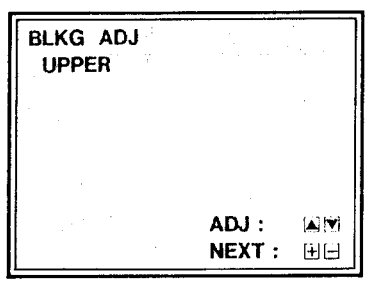
Registration Adjustment

Releasing Blanking Adjustment

The registration adjustment is difficult if the entire test pattern is not visible. Follow the steps below to make the whole test pattern visible.



1 **Press the BLKG key to enter the blanking adjustment mode.**



2 **Press the TEST key to display the hatch pattern.**

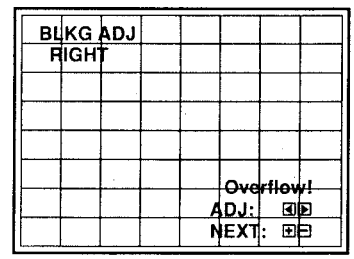
3 **Press the POSITION +/– keys to select the part to be adjusted.**
When the + key is pressed, the position will change as follows:

UPPER → LOWER → LEFT → RIGHT

When the – key is pressed, the position will change in the reverse of the above order.

4 **Press the arrow keys until "Overflow!" is displayed on the screen for each position.**

▲: UPPER, ▼: LOWER, ◀: LEFT, ▶: RIGHT



What is blanking?
Blanking is masking the picture. The picture size of this projector is adjusted at the factory to fit the 120-inch screen. According to the installation method, it is necessary to reduce or increase the masking to fit the picture to the screen. Here, reduce the masking to the minimum (the picture is projected at the largest size), and after the registration adjustment is complete, perform the blanking adjustment to fit the screen used.

Note
There may be a rainbow-like vertical band on the right side or a diagonal line on the upper part of the screen. As they can be adjusted with the blanking adjustment later (see page 84), leave them alone for now.

Green Registration Adjustment

Be sure to adjust starting with the green test pattern.
When adjusting green, do not perform the ZONE adjustment as far as possible. If the green ZONE adjustment is great, the adjustment of red and blue may be difficult.

1 Green centering adjustment

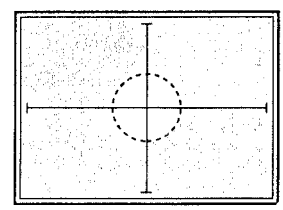
Adjust so that the center of the test pattern is aligned with the center of the screen.

1 **Press the ZONE key.**
The hatch pattern and the cursor are displayed.
If the cursor is not centered, press the POSITION key to move it to the center of the screen.

2 **Press the ADJ G key.**

3 **Press the CUT OFF R and B keys to display green only.**

4 **Press the arrow keys to align the center of the hatch pattern with the center of the screen.**



Notes
- At this time perform the ZONE adjustment only for the center zone.
- If the center of the test pattern is off the center of the screen by a large amount, check that the CRT spacers are correctly installed or the installation of the projector is correct.

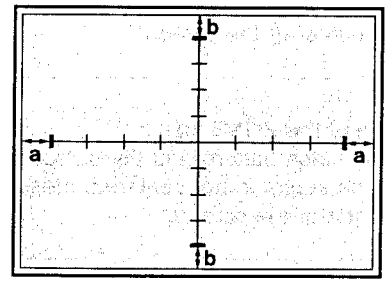
Registration Adjustment

2 Green SIZE and LIN (linearity) adjustment

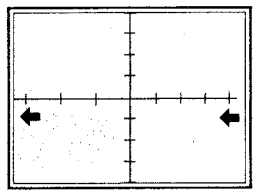
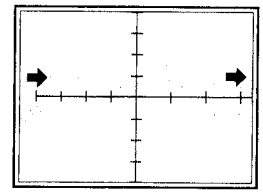
Adjust the size of the displayed picture with respect to the screen, and the picture's up, down, left and right balance.

1 **Press the LIN key.**
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 **Press the ADJ G key.**
Pay attention only to the bold lines (the ends of the vertical and horizontal lines).

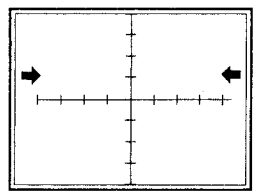
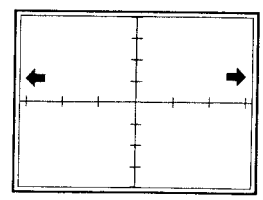


3 **Adjust with the ◄ and ► keys until parts (a) on the right and left are of equal length.**

◄	The right and left vertical lines are shifted to the left while the vertical center line remains unmoved. 	►	The right and left vertical lines are shifted to the right while the vertical center line remains unmoved. 

4 **Press the SIZE key.**

5 **Adjust with the ◄ and ► keys until parts (a) on the right and left are 15 — 20 mm long.**

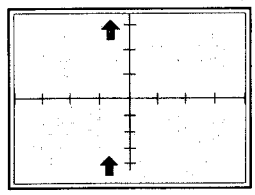
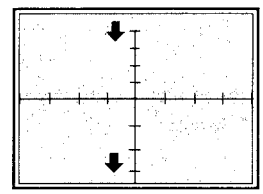
◄	The horizontal size is reduced. 	►	The horizontal size is expanded. 

6 **If they are not aligned, press the LIN key and repeat steps 3 to 5.**

7 **If the center of the cross hair pattern is off-centered on the screen, perform the centering adjustment again and repeat steps 1 to 6 for the horizontal size adjustment.**
(See page 69 for the centering adjustment.)

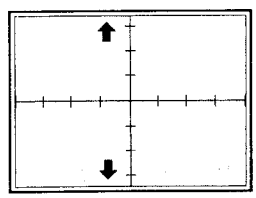
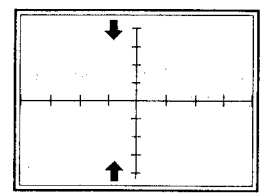
8 **Press the LIN key.**

9 **Adjust with the ▲ and ▼ keys until parts (b) at the top and bottom are of equal length.**

▲	The upper and lower horizontal lines are shifted upward while the horizontal center line remains unmoved. 	▼	The upper and lower horizontal lines are shifted downward while the horizontal center line remains unmoved. 

10 **Press the SIZE key.**

11 **Adjust with the ▲ and ▼ keys until parts (b) at the top and bottom are about 15 — 20 mm long.**

▲	The vertital size is expanded. 	▼	The vertital size is reduced. 

12 **If they are not aligned, repeat steps 8 to 11.**

13 **If the center of the cross hair pattern is off-centered on the screen, perform the centering adjustment again and then repeat steps 8 to 12 for the vertical size adjustment.**
(See page 69 for the centering adjustment.)

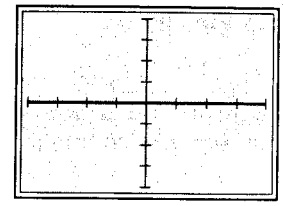
14 **After the adjustment is complete, press the MEMORY key to save the data.**

Registration Adjustment

3 Green SKEW and BOW adjustments

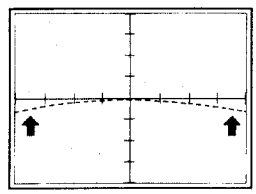
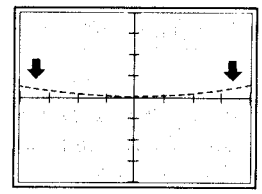
Display the cross hair pattern and adjust the bow-like or skew distortion of the horizontal and vertical center lines to make them parallel to the screen edges.

A. Horizontal line adjustment
Pay attention only to the bold line (horizontal center line).



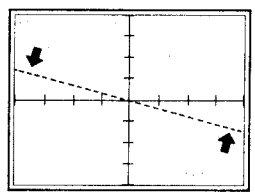
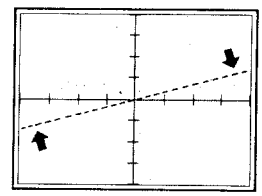
1 **Press BOW key.**
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 **Adjust distortion as illustrated below with the ▲ and ▼ keys.**

▲	The right and left sides of the line are curved upward while the center remains unchanged. 	▼	The right and left sides of the line are curved downward while the center remains unchanged. 

3 **Press the SKEW key.**

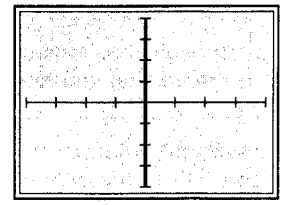
4 **Adjust distortion as illustrated below with the ▲ and ▼ keys.**

▲	The horizontal line leans toward upper right. 	▼	The horizontal line leans toward lower right. 

5 **Repeat steps 1 to 4 until the horizontal lines become parallel to the screen edges.**

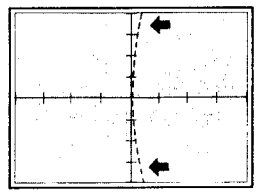
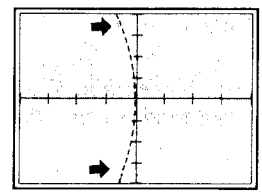
6 **When the adjustment is complete, press the MEMORY key to save the adjustment data.**

B. Vertical line adjustment
Pay attention only to the bold line (vertical center line).



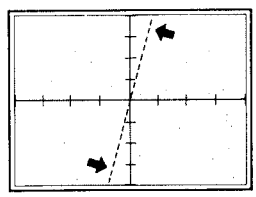
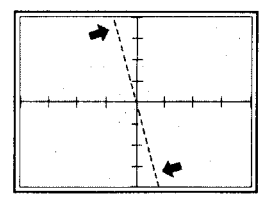
1 **Press BOW key.**

2 **Adjust distortion as illustrated below with the ◄ and ► keys.**

◄	The upper and lower parts of the line are curved leftward while the center remains unchanged. 	►	The upper and lower parts of the line are curved rightward while the center remains unchanged. 

3 **Press the SKEW key.**

4 **Adjust distortion as illustrated below with the ◄ and ► keys.**

◄	The vertical line leans leftward. 	►	The vertical line leans rightward. 

5 **Repeat steps 1 to 4 until the vertical line becomes parallel to the screen edges.**

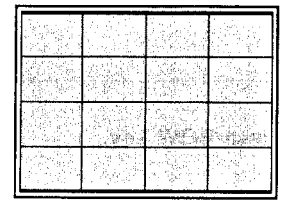
6 **When the adjustment is complete, press the MEMORY key to save the adjustment data.**

Registration Adjustment

4 Green KEY (keystone) and PIN (pincushion) adjustments

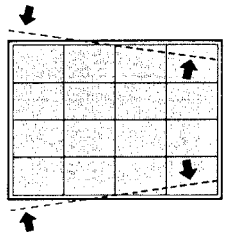
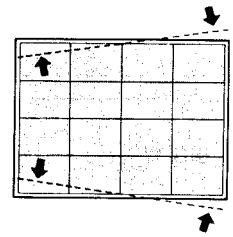
Adjust the trapezoidal distortion and the pin-cushion distortion in the vertical and horizontal directions.

A. Horizontal line adjustment
Pay attention only to the bold lines (top and bottom horizontal lines).



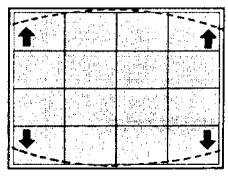
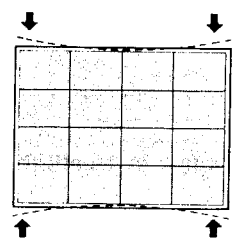
1 **Press the KEY key.**
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 **Adjust distortion as illustrated below with the ▲ and ▼ keys.**

▲	The lines spread apart on the right side and come together on the left side. 	▼	The lines spread apart on the left side and come together on the right side. 

3 **Press the PIN key.**

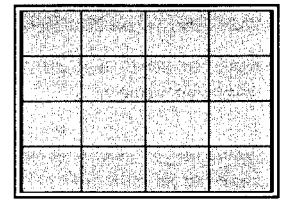
4 **Adjust distortion as illustrated below with the ▲ and ▼ keys.**

▲	The ends of the top and bottom lines spread apart. 	▼	The ends of the top and bottom lines come together. 

5 **Repeat steps 1 to 4 until the horizontal lines become parallel to the screen edges.**

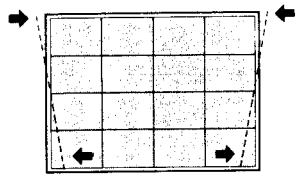
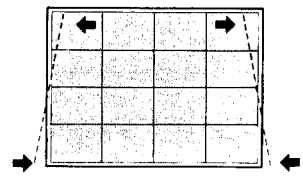
6 **When the adjustment is complete, press the MEMORY key to save the adjustment data.**

B. Vertical line adjustment
Pay attention only to the bold lines (right and left side vertical lines).



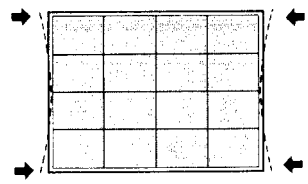
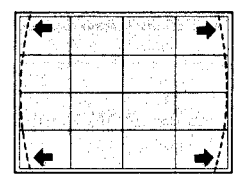
1 **Press the KEY key.**

2 **Adjust distortion as illustrated below with the ◄ and ► keys.**

◄	The lines spread apart at the bottom and come together at the top. 	►	The lines spread apart at the top and come together at the bottom. 

3 **Press the PIN key.**

4 **Adjust distortion as illustrated below with the ◄ and ► keys.**

◄	The ends of the right and left side lines come together. 	►	The ends of the right and left side lines spread apart. 

5 **Repeat steps 1 to 4 to make the vertical lines parallel to the screen edges.**

6 **When the adjustment is complete, press the MEMORY key to save the adjustment data.**

The green registration adjustment is complete.
Proceed to the adjustment for the red signal.

Registration Adjustment

Red Registration Adjustment

Adjust the red signal so that it converges with the green signal and is seen as yellow.

5 Red centering adjustment

Adjust so that the center of the red test pattern is aligned with that of the green pattern.

1 **Press the ZONE key.**
The hatch pattern and the cursor are displayed.
If the cursor is not centered, press the POSITION key to move it to the center of the screen.

2 **Press the ADJ R key.**

3 **Press the CUT OFF B key to display green and red.**

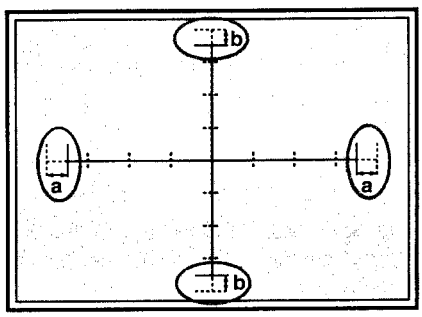
4 **Press the arrow keys to align the center of the red hatch pattern with that of the green pattern.**

Note
At this time perform the ZONE adjustment for the center zone only.

6 Red SIZE and LIN (linearity) adjustments

1 **Press the LIN key.**
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 **Press the ADJ R key.**
Pay attention only to the encircled portions.



----: green ——: red

3 **Move the red lines with the ◄ and ► keys until parts (a) on the right and left are of equal length.**

◄: The right and left vertical lines are shifted to the left while the vertical center line remains unmoved.
►: The right and left vertical lines are shifted to the right while the vertical center line remains unmoved.

4 **Press the SIZE key.**

5 **Adjust with the ◄ and ► keys so that the red and green lines in the right and left encircled portions converge.**

◄: The horizontal size is reduced.
►: The horizontal size is expanded.

6 **If adjustment fails, press the LIN key and then repeat steps 3 to 5.**

7 **If the center of the cross hair pattern is off-centered on the screen, perform the centering adjustment again and repeat steps 1 to 6 for horizontal size adjustment.**
(See page 76 for the centering adjustment.)

8 **Press the LIN key.**

9 **Move the red lines with the ▲ and ▼ keys until parts (b) at the top and bottom are of equal length.**

▲: The upper and lower horizontal lines are shifted upward while the horizontal center line remains unmoved.
▼: The upper and lower horizontal lines are shifted downward while the horizontal center line remains unmoved.

10 **Press the SIZE key.**

11 **Adjust with the ▲ and ▼ keys so that the red and green lines at the top and bottom encircled portions converge.**

▲: The vertical size is expanded.
▼: The vertical size is reduced.

12 **If adjustment fails, repeat steps 8 to 11.**

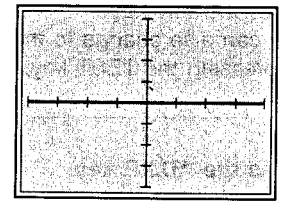
13 **If the center of the cross hair pattern is off-centered on the screen, perform the centering adjustment again and repeat steps 8 to 12 for vertical size adjustment.**
(See page 76 for centering adjustment.)

14 **After the adjustment is complete, press the MEMORY key to save the data.**

Registration Adjustment

7 Red SKEW and BOW adjustments

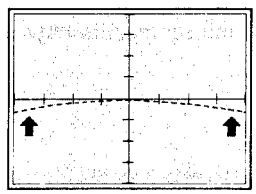
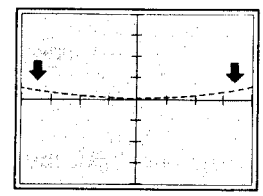
A. Horizontal line adjustment
Pay attention only to the bold line (horizontal center line).



1 **Press the BOW key.**
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 **Adjust distortion as illustrated below with the ▲ and ▼ keys.**

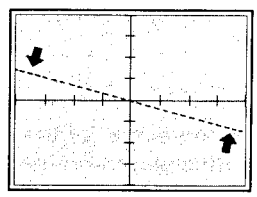
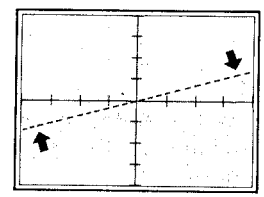
----: red ——: green

▲	The right and left sides of the line are curved upward while the center remains unchanged. 	▼	The right and left sides of the line are curved downward while the center remains unchanged. 

3 **Press the SKEW key.**

4 **Adjust distortion as illustrated below with the ▲ and ▼ keys.**

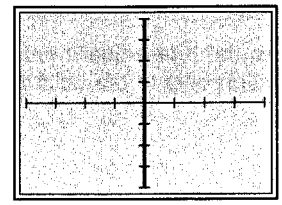
----: red ——: green

▲	The horizontal line leans toward upper right. 	▼	The horizontal line leans toward lower right. 

5 **Repeat steps 1 to 4 until the red horizontal line converges with the green line.**

6 **When the adjustment is complete, press the MEMORY key to save the adjustment data.**

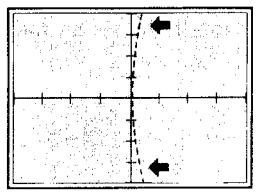
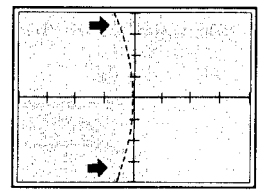
B. Vertical line adjustment
Pay attention only to the bold line (vertical center line).



1 **Press the BOW key.**
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 **Adjust distortion as illustrated below with the ◀ and ▶ keys.**

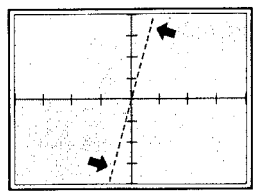
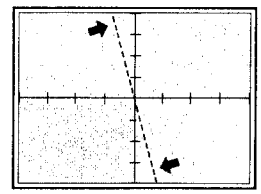
----: red ——: green

◀	The upper and lower parts of the line are curved leftward while the center remains unchanged. 	▶	The upper and lower parts of the line are curved rightward while the center remains unchanged. 

3 **Press the SKEW key.**

4 **Adjust distortion as illustrated below with the ◀ and ▶ keys.**

----: red ——: green

◀	The vertical line leans leftward. 	▶	The vertical line leans rightward. 

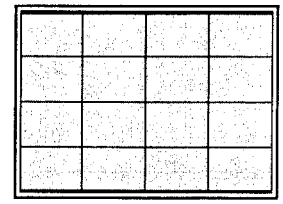
5 **Repeat steps 1 to 4 until the red vertical line converges with the green line.**

6 **When the adjustment is complete, press the MEMORY key to save the data.**

Registration Adjustment

8 Red KEY (keystone) and PIN (pincushion) adjustments

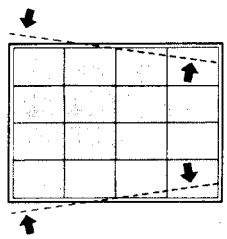
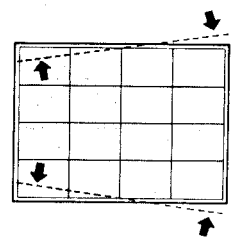
A. Horizontal line adjustment
Pay attention only to the bold lines (top and bottom lines).



1 **Press the KEY key.**
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 **Adjust distortion as illustrated below with the ▲ and ▼ keys.**

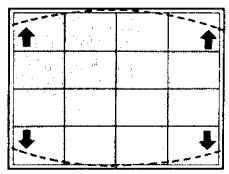
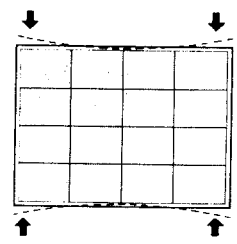
----: red ——: green

▲	The lines spread apart on the right side and come together on the left side. 	▼	The lines spread apart on the left side and come together on the right side. 

3 **Press the PIN key.**

4 **Adjust distortion as illustrated below with the ▲ and ▼ keys.**

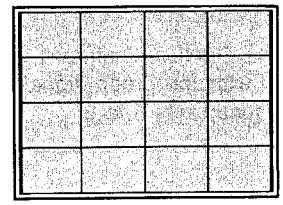
----: red ——: green

▲	The ends of the top and bottom lines spread apart. 	▼	The ends of the top and bottom lines come together. 

5 **Repeat steps 1 to 4 until the red horizontal lines converge with the green lines.**

6 **When the adjustment is complete, press the MEMORY key to save the data.**

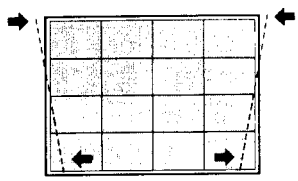
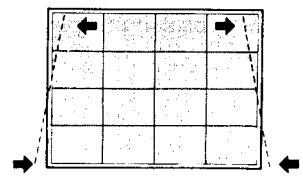
B. Vertical line adjustment
Pay attention only to the bold lines (right and left side lines).



1 **Press the KEY key.**
You can also change to the 9 × 9 hatch pattern by pressing the TEST key.

2 **Adjust distortion as illustrated below with the ◀ and ▶ keys.**

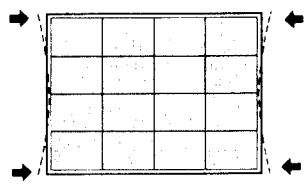
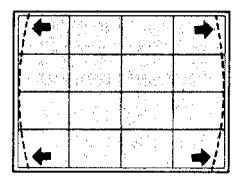
----: red ——: green

◀	The lines spread apart at the bottom and come together at the top. 	▶	The lines spread apart at the top and come together at the bottom. 

3 **Press the PIN key.**

4 **Adjust distortion as illustrated below with the ◀ and ▶ keys.**

----: red ——: green

◀	The ends of the right and left side lines come together. 	▶	The ends of the right and left side lines spread apart. 

5 **Repeat steps 1 to 4 until the red vertical lines converge with the green lines.**

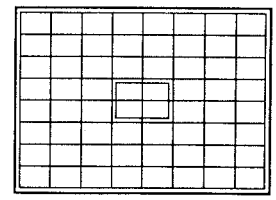
6 **When the adjustment is complete, press the MEMORY key to save the data.**

Registration Adjustment

9 Red ZONE adjustment

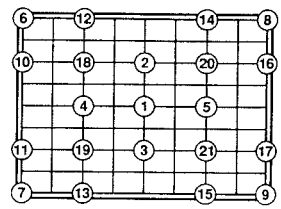
Perform the ZONE adjustment after the red signal has converged with the green signal as far as possible in the red adjustments 5 to 8.

1 **Press the ZONE key.**
The hatch pattern and the cursor are displayed.

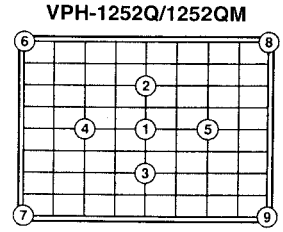


2 **Press the POSITION key to select the part to be adjusted.**
When the + key is pressed, the cursor moves in the numerical order as illustrated.
When the – key is pressed, the cursor moves in the reverse order.
The selected position number will be displayed in the upper right corner.

VPH-1272Q/1272QM



VPH-1252Q/1252QM



3 **Adjust the red line distortion in the area of the cursor position with the arrow keys.**

Adjustment hint (only for VPH-1252Q/1252QM)
After you adjust the distortion in zones 6 to 9, there may still be distortion at a line inside. In this case, adjust equally noting the outermost line and one line inside.

4 **When the adjustment is complete, press the MEMORY key to save the data.**

The red registration adjustment is complete.
Proceed to the registration adjustment of the blue signal.

Blue Registration Adjustment

Adjust the blue signal so that it converges with the red signal which has been adjusted. When the blue and red test patterns converge, the pattern is seen as magenta.

10 Blue centering adjustment

Adjust so that the center of the blue test pattern is aligned with that of the red pattern.

1 **Press the ZONE key.**

2 **Press the ADJ B key.**

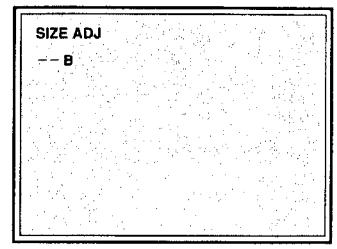
3 **Press the CUT OFF G key to display blue and red.**

4 **Press the arrow keys until the center of the blue hatch pattern is aligned with that of the red pattern.**

Note
At this time perform the ZONE adjustment for the center zone only.

11 Blue SIZE, LIN (linearity), SKEW, BOW, KEY (keystone), PIN (pincushion) and ZONE adjustments

Adjust so that the blue signal converges with the red signal in each adjustment. The procedures are the same as for the red registration adjustments (pages 77 — 82).
Make sure that "ADJ B" is displayed on the screen when adjusting the blue signal.



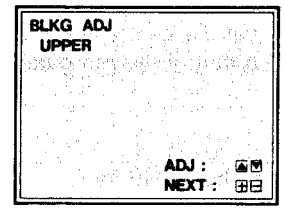
When the blue adjustment is complete, press the MEMORY key to save the adjustment data.

Registration Adjustment

Blanking Adjustment

After the registration adjustments, perform this adjustment to erase a rainbow-like vertical band at the right side or a diagonal line at the upper part of the screen.

1 **Press the BLKG key.**



2 **Press the TEST key to display the hatch pattern.**

3 **Press the POSITION +/– key to select the part to be adjusted.**
When the + key is pressed, the position will change as follows:

UPPER → LOWER → LEFT → RIGHT

When the – key is pressed, the position will change in the reverse of the above order.

4 **Adjust with the arrow keys.**
Press the ▲ and ▼ keys to adjust the UPPER and LOWER parts.
A diagonal line at the upper part will be erased with the UPPER adjustment.
Press the ◀ and ▶ keys to adjust the LEFT and RIGHT parts.
A rainbow-like vertical band at the right side will be erased with the RIGHT adjustment.

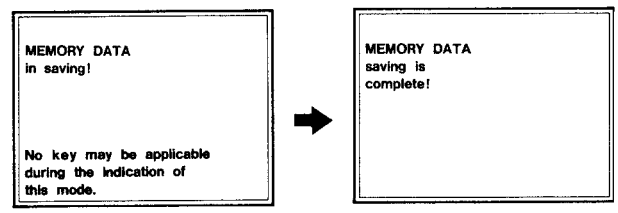
5 **When the adjustment is complete, press the MEMORY key to save the adjustment data.**

Saving the Standard Registration Data

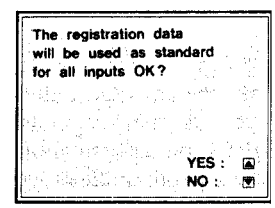
When the registration adjustments for the green, red and blue signals are complete, save the adjusted data as standard data.

1 **Press the MEMORY key. (Do not keep this key pressed.)**
The adjusted data is saved in the memory of an internal signal whose horizontal frequency is approximately 34 kHz.

Note
During saving, other keys do not function.



2 **Keep pressing the MEMORY key for more than 3 seconds.**
The message appears and the projector enters the standard data saving mode.



3 **Press the ▲ key (for YES).**
All the registration data will be converted into the data of the internal signal and are saved as standard data.

Note
If the adjustment data are saved as standard data, the registration data with other horizontal frequencies will be converted into the standard data if they have not been saved before.

Registration Adjustment

Memory structure

This projector saves the adjustment data in one of eight (VPH-1272Q/1272QM) or six (VPH-1252Q/1252QM) memories according to the horizontal frequency of the input signal.
The acceptable horizontal frequency is divided into the following blocks with each block assigned to a different memory.

Registration memory block	Horizontal Frequency	
	VPH-1272Q/1272QM	VPH-1252Q/1252QM
1	fH = 15 kHz — 19 kHz	fH = 15 kHz — 19 kHz
2	fH = 19 kHz — 24 kHz	fH = 19 kHz — 24 kHz
3	fH = 24 kHz — 30 kHz	fH = 24 kHz — 30 kHz
4	fH = 30 kHz — 37 kHz	fH = 30 kHz — 37 kHz
5	fH = 37 kHz — 45 kHz	fH = 37 kHz — 45 kHz
6	fH = 45 kHz — 55 kHz	fH = 45 kHz — 61.5 kHz
7	fH = 55 kHz — 66 kHz	—
8	fH = 66 kHz — 93 kHz	—

When a signal is input, its horizontal frequency is automatically detected and the memory is selected.
When you perform registration adjustment with no input, the registration adjustment is performed with the projector's internal signal, whose horizontal frequency is approximately 34 kHz. So the adjustment data is saved in registration memory block 4.
If the adjustment data is saved as standard data, the factory preset data for all the memories will be calculated and changed to reflect the new registration information. By this operation the standard data in that installation condition is saved, which makes the subsequent adjustment for each input signal easier.
Follow the two steps below.

1 **After installation, perform registration adjustment with no input and save the adjustment data. Then save the adjusted data as standard data.**
2 **Perform installation adjustment for each input signal and save the adjustment data.**

For reference — Memory architecture

Memory Name	Memory Data	How the projector recognizes data	When data is memorized
Channel Memory	Picture control Video SIZE	Input connector	When the MEMORY key is pressed When the input connector is switched When the power is turned off with the Remote Commander
Status Memory	RGB SIZE, SHIFT Blanking SECAM ON/OFF CLEAR BLUE ON/OFF Color temperature (9300/6500/3200/Preset) V-SHIFT	Horizontal and vertical frequency Condition of sync signal Input connector	When the MEMORY key is pressed When the power is turned off with the Remote Commander
Registration Memory	Registration	Registration memory block (Horizontal frequency of the input signal)	When the MEMORY key is pressed When the input connector is switched When the horizontal frequency is changed When the power is turned off with the Remote Commander
Color Temperature Memory	W/B Bias and Gain	Color temperature (9300/6500/3200/ Preset)	When the MEMORY key is pressed When the input connector is switched When the color temperature is changed When the power is turned off with the Remote Commander

- One projector has only one memory data each for the baud rate, CRT timer and STATUS ON/OFF.

Note
When the adjustment is complete, be sure to press the MEMORY key or turn off the power with the Remote Commander.

Fine Adjustment of Each Input Signal

After the registration adjustment is performed with no input source connected and the adjusted data are saved as standard data, next input an external signal and carry out the fine adjustment and other adjustments for each input signal.

Fine Adjustment of the Video Input Signal

1 **Connect the video signal source.**
Connect to the VIDEO IN jack on the projector or to the PC-1271/1271M switcher with the IFB-1000 interface board installed.

2 **Select the input to be adjusted.**
Press the INPUT SELECT VIDEO key on the Remote Commander. Or, set the SWITCHER/INDEX select switch to SWITCHER and then from among the number keys from 1 to 8, press a key for a video input source.

3 **Press the PAGE key four times.**
Check that the horizontal frequency of the input signal ("fH") indicates 15.7 kHz.

Fine registration adjustment

1 **Press the TEST key to display the hatch pattern.**

2 **If necessary, perform the fine adjustment.**
See pages 69 to 83 for the adjustment procedures.

3 **When the fine adjustment is complete, press the MEMORY key to save the adjusted data.** (Do not keep it pressed.)
The adjusted value will be saved normally.

SIZE adjustment

Adjust the size of the picture if it does not fit the screen.

1 **Press the RGB SIZE key.**
The video SIZE can be adjusted with the RGB SIZE key.

2 **Adjust with the arrow keys.**

▲: The vertical size is expanded.
▼: The vertical size is reduced.
▶: The horizontal size is expanded.
◀: The horizontal size is reduced.

3 **After the adjustment is complete, press the MEMORY key.**
The adjusted data will be saved.

Blanking Adjustment

If the displayed picture is bigger than the screen, cut off the excess parts.

1 **Press the BLKG key.**

2 **Press the POSITION +/– key to select the part to be adjusted.**
When the + key is pressed, the position will change as follows:
UPPER → LOWER → LEFT → RIGHT
When the – key is pressed, the position will change in the reverse of the above order.

3 **Adjust with the arrow keys.**
Press the ▲ and ▼ keys to adjust the UPPER and LOWER positions.
Press the ◄ and ► keys to adjust the LEFT and RIGHT positions.

4 **After the adjustment is complete, press the MEMORY key.**
The adjusted data will be saved.

Note
When two or more video input sources are connected to the projector using the switcher, perform the SIZE and blanking adjustments for each signal input from different input connector.

Fine Adjustment of the RGB Input Signal

1 **Connect the RGB input source.**
Connect to the RGB IN connector on the projector or to the PC-1271/1271M switcher with the optional interface board installed.

2 **Select the input to be adjusted.**
Press the INPUT SELECT A or B key on the Remote Commander. Or, set the SWITCHER/INDEX select switch to SWITCHER and then from among the number keys from 1 to 8, press a key for an RGB input source.

3 **Press the PAGE key four times to check the horizontal frequency ("fH") of the input signal.**
If "fH" indicates 30 — 37 kHz (the range of registration memory block 4), the fine adjustment is not necessary.
For the input signals of other "fH", perform the fine adjustment.

Fine Adjustment of Each Input Signal

Fine registration adjustment

1 **Press the TEST key to display the hatch pattern.**

2 **If necessary, perform the fine registration adjustment.**
See pages 69 — 83 for the adjustment procedures.

3 **When two or more RGB input sources are connected, group them according to the horizontal frequency by checking the "fH" in PAGE 4 display.**

4 **Perform the fine registration adjustment for each group.**
After the adjustment is complete, press the MEMORY key.
(Do not keep this key pressed.)
The adjusted data will be saved.

Adjustment hint
The projector saves the registration adjustment data in one of eight (for VPH-1272Q/1272QM) or six (for VPH-1252Q/1252QM) registration memory blocks according to the horizontal frequency of the input signals. (See page 86 for details.) When two or more signals are input, you need to perform the fine adjustment for each block. If two or more input signals are grouped into the same memory block perform the adjustment for any one of them. You can check in which block the signal is grouped by displaying PAGE 4.

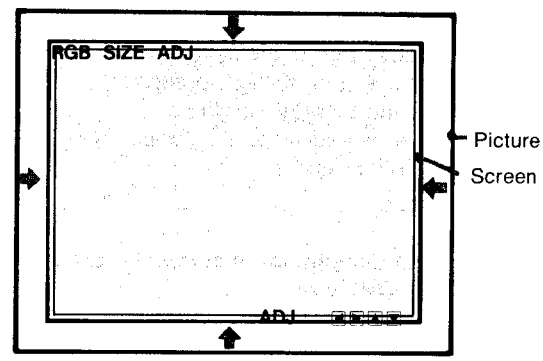
RGB SIZE adjustment

If the size of the picture does not fit the screen, adjust the RGB SIZE adjustment.

1 **Press the RGB SIZE key.**

2 **Adjust with the arrow keys so that the picture fits the screen.**

▲: The vertical size is expanded.
▼: The vertical size is reduced.
►: The horizontal size is expanded.
◄: The horizontal size is reduced.



3 **When the adjustment is complete, press the MEMORY key.**
The adjusted data will be saved.

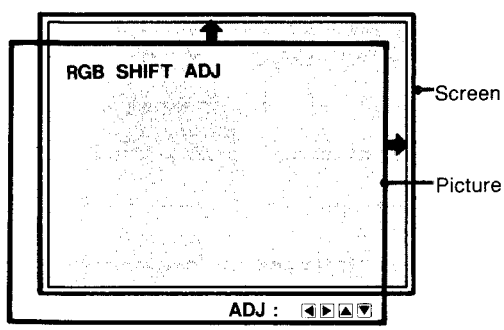
RGB SHIFT Adjustment

If the picture needs to be shifted to fit the screen, adjust the RGB SHIFT adjustment.

1 **Press the RGB SHIFT key.**

2 **Adjust with the arrow keys so that the picture fits the screen.**

▲: The picture is shifted upward.
▼: The picture is shifted downward.
◄: The picture is shifted leftward.
►: The picture is shifted rightward.



3 **When the adjustment is complete, press the MEMORY key.**
The adjusted data will be saved.

Blanking Adjustment

If the displayed picture is bigger than the screen, cut off the excess parts.

1 **Press the BLKG key.**

2 **Press the POSITION +/– key to select the part to be adjusted.**
When the + key is pressed, the position will change as follows:
UPPER → LOWER → LEFT → RIGHT
When the – key is pressed, the position will change in the reverse of the above order.

3 **Adjust with the arrow keys.**
Press the ▲ and ▼ keys to adjust the UPPER and LOWER positions.
Press the ◄ and ► keys to adjust the LEFT and RIGHT positions.

4 **When the adjustment is complete, press the MEMORY key.**
The adjusted data will be saved.

Note
When two or more RGB input sources are connected to the projector, perform the size, shift and blanking adjustments for each RGB signal which has any item different from each other in the signal input conditions displayed in PAGE 4.

Fine Adjustment of Each Input Signal

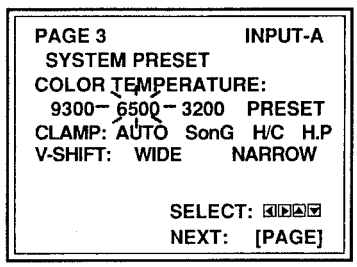
White Balance Adjustment

The color temperatures are preset at the factory to 9300K, 6500K and 3200K. However, if you want to set a color temperature other than the factory-preset levels, you can adjust the white balance and save it in the memory. You can also change the factory-preset levels.

Setting the white balance

1 **Display the same input signal on the projector and the color monitor.**

2 **Press the PAGE key three times to display PAGE 3.**



3 **Press the arrow keys to select 9300, 6500 or 3200, the nearest color temperature to that of the color monitor or the desired one.**
Normally set to 6500. Set to 9300 to make white color bluish and select 3200 to make it reddish.

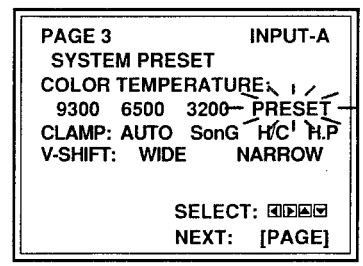
4 **Press the MEMORY key.**

Adjusting the white balance

If you want to make the color of a particular input signal (ex. HDTV system picture) uniform to that of the color monitor, you can adjust the white balance.
Display the same input signal on the projector and the monitor.

1 **Press the PAGE key three times to display PAGE 3.**

2 **Set COLOR TEMPERATURE to PRESET with the arrow keys.**



3 **Set the contrast and the brightness of the color monitor to the standard levels.**

4 **Adjust the black level.**

① **Press the W/B BIAS key.**
The PLUGE pattern is displayed.
The contrast and the brightness levels of the projector are automatically set to 80 and 50 respectively.

② **Keep pressing the TEST key for more than 5 seconds.**
The picture of the input signal is displayed.

③ **Press the ADJ R, G or B key to select the color to be adjusted.**
In selecting the color, pay attention to the black part of the picture displayed on the projector screen and note which color stands out compared with the same part displayed on the color monitor.

④ **Press the ◄ or ► key so that the black color of the picture on the projector looks the same as that on the monitor.**
If the brightness of that part does not look the same as that on the monitor, adjust other colors by pressing the ADJ R, G or B key and arrow keys.

⑤ **Press the MEMORY key.**
The adjusted data is saved.

5 **Adjust the white level.**

① **Press the W/B GAIN key.**
The window pattern is displayed.
The contrast and the brightness levels of the projector are automatically set to 80 and 50, respectively.

② **Keep pressing the TEST key for more than 5 seconds.**
The picture of the input signal is displayed.

③ **Press the ADJ R, G or B key to select the color to be adjusted.**
In selecting the color, pay attention to the white part of the picture displayed on the projector screen and note which color stands out compared with the same part displayed on the color monitor.

④ **Press the ◄ or ► key so that the white part of the picture on the projector screen looks the same as that on the monitor.**
If the brightness of that part does not look the same as that on the monitor, adjust other colors by pressing the ADJ R, G or B key and the arrow keys.

⑤ **Press the MEMORY key.**
The adjusted data is saved.

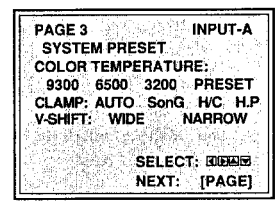
When multiple projectors are used
Input the same signal to the based projector and the projector to be adjusted.
Set COLOR TEMPERATURE on PAGE 3 to the same position on both projectors and then follow steps 4 and 5 in the above procedures to make the black and white colors uniform between the based projector and the other.

Note
You can adjust more easily if you set the COLOR level to MIN to display the black and white picture.

If the Luminance of the Picture is Incorrect — Clamp Setting

Clamp is used as a standard for setting the black level of the picture correctly. The standard position of the clamp depends on the kind of the sync signal. Normally the CPU may judges the signal and sets the clamp position automatically.
However, the CPU may misjudge the signal because of noise. If the luminance of the picture seems to be incorrect (too dark, the black color is too light, or the luminance is unstable), the clamp position may need to be changed.
In such case, change the clamp position following the procedure below.

1 **Press the PAGE key 3 times.**



2 **Select the clamp position by pressing ◄, ►, ▲ and ▼ keys.**

AUTO : Automatic setting mode. Normally, set to this position.
S on G : If the black color is too light or seems to be green, set to this position.
H/C : If the picture is too dark or the luminance is unstable, set to this position.
H.P : If the luminance is still incorrect after changing the clamp setting to "S on G" or "H/C", set to this position and perform H-SHIFT adjustment.

3 **Press the MEMORY key to save the data.**

If the luminance is still incorrect after changing the clamp setting
There may be other problems with the input signal or connection. Check the input signal.

Data Reset

There are two possibilities for data reset, the data reset and factory reset.

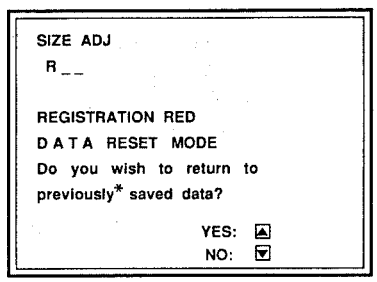
Previous data reset — The data are reset to the previously saved data (the data before the adjustment).

Factory reset — The data are reset to the factory preset level. The factory reset can be performed after the previous data reset.

How to Reset the Data

1 **Select the adjustment mode to be reset.**

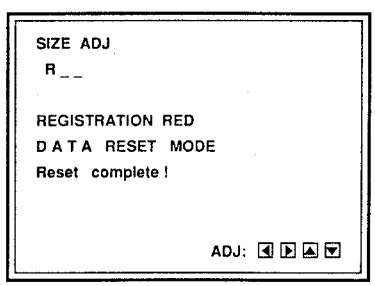
2 **Press the ◄ and ► keys simultaneously.**
The following display appears.



* Check that "previously" is displayed here.

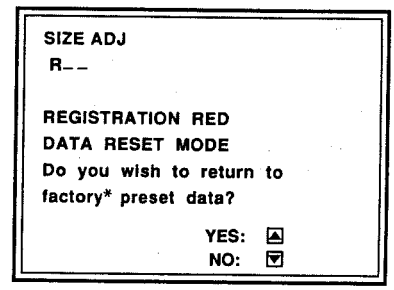
(ex. To reset all the red registration adjustment data to the previously saved data)

3 **Press the ▲ key.**



All the red registration adjustment data will be reset to the previously saved data.
(**Previous data reset**)

4 **Press the ◄ and ► keys simultaneously again.**
The following display appears.



* Check that "factory" is displayed here.

(ex. To reset all the red registration adjustment data to the factory preset level)

5 **Press the ▲ key.**
All the red registration adjustment data will be reset to the factory preset level.
(**Factory reset**)

Resetting the Registration Standard Data to the Factory Preset Levels

If the registration data were adjusted and saved, you need reset the data to the factory preset levels before starting the registration adjustment.

1 **Press the CENT R and B keys simultaneously to enter the green centering adjustment mode.**

2 **Follow steps 2 to 5 on page 94.**
The centering adjustment data of the red, green and blue signals are reset to the factory preset levels.

3 **Press the SIZE key.**

4 **Press the ADJ G key and then perform the factory reset operation.**
The SIZE, LIN, SKEW, BOW, KEY, PIN and ZONE adjustment data are reset to the factory preset levels.

5 **Press the ADJ R key and then perform the factory reset operation.**
The SIZE, LIN, SKEW, BOW, KEY, PIN and ZONE adjustment data are reset to the factory preset levels.

6 **Press the ADJ B key and then perform the factory reset operation.**
The SIZE, LIN, SKEW, BOW, KEY, PIN and ZONE adjustment data are reset to the factory preset levels.

7 **Press the BLKG key.**

8 **Press the TEST key and then perform the factory reset operation.**
The UPPER, LOWER, LEFT and RIGHT blanking adjustment data are reset.

The resetting of the standard data to the factory preset levels is complete.
Then start the registration adjustment.

Data Reset

For reference — Mode and data reset correspondence

Mode	Data to be reset
RGB Size	H-size and V-size
RGB Shift	H-shift and V-shift
G-centering	Centering data for all colors
R-centering	Not applicable
B-centering	Not applicable
Size, Linearity Skew, Bow Keystone Pincushion	All the registration data for the selected color (including the Zone data)
Zone	Zone data for the selected color is set to the middle adjustment level (128).
Blanking	UPPER/LOWER/LEFT/RIGHT side blanking data
Gain, Bias	All the Bias and Gain data for all colors at the current color temperature

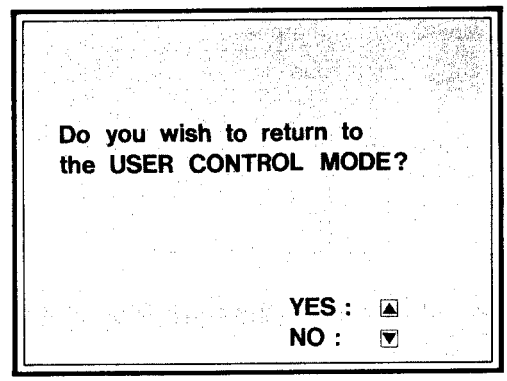
ZONE data reset

The ZONE data reset allows to set the ZONE data of all the positions to 128, middle adjustment level. Perform the ZONE data reset if wavelike distortion occurs with the outermost line of the hatch pattern or the red and blue lines do not converge when adjusting registration (only when the projector is not installed on the floor using the 120-inch front type screen). After the ZONE data reset, start with the KEY and PIN adjustments and then perform the ZONE adjustment again.

To Activate the Protection on the Remote Commander

When you turn off the projector with the Remote Commander, the adjustment keys become inoperable in order to prevent the users from changing the registration adjustments.
It is also possible to make the keys inoperable while the power is on in the following way.

1 **Keep pressing the NORMAL key for at least 3 seconds.**



2 **Press the ▲ key.**
The adjustment keys are now inoperable.

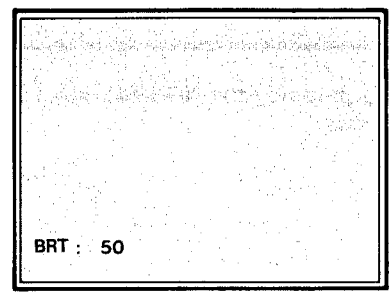
Picture Adjustment

Adjust the picture for your preference. The adjusted data can be saved in the memory.

1 **Adjust with the PICTURE CONTROL +/– keys.**

CONTR	picture contrast
COLOR	color intensity
BRT	brightness
SHARP	sharpness
HUE	hue

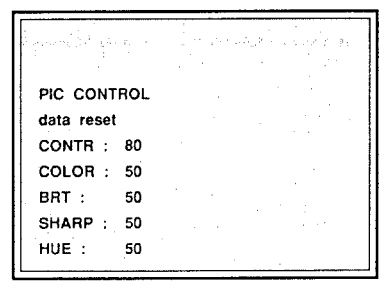
The adjustment levels are digitally displayed having a range of MIN, 1, 2 ... 99, Max.



2 **When the adjustment is complete, press the MEMORY key.**

To restore the factory preset levels

Press the RESET key.
The factory preset levels are displayed on the screen.



Notes

- The COLOR, SHARP and HUE keys do not function on the pictures input from the RGB IN connectors.
- The HUE and COLOR keys do not function if the input signal is black and white.
- The HUE key does not function with the PAL or SECAM color source.

Dynamic picture mode (only for the video input pictures)

You can obtain the picture of high quality contrast by setting the DYNAMIC PIC SW to ON inside the projector. See "Dynamic picture setting" on page 34.

Others

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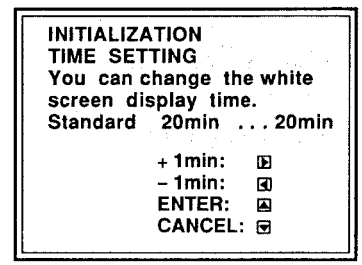
Changing the Initialization Time

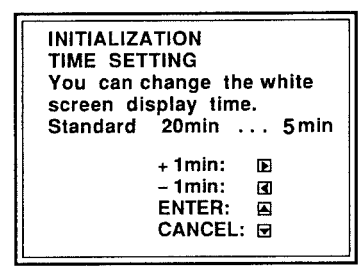
You can set the period of initializing when the projector warms up to the desired minutes in intervals of 1 minute.

1 **Set the Remote Commander to the serviceman adjustment mode.**
(See page 47.)

2 **Keep pressing the POWER ON key on the Commander for 5 seconds.**
The following display appears.



3 **Press the ► and ◄ keys to set to the desired minutes.**
►: to increase by 1 minute
◄: to decrease by 1 minute



4 **Press the ▲ key.**
The display disappears.

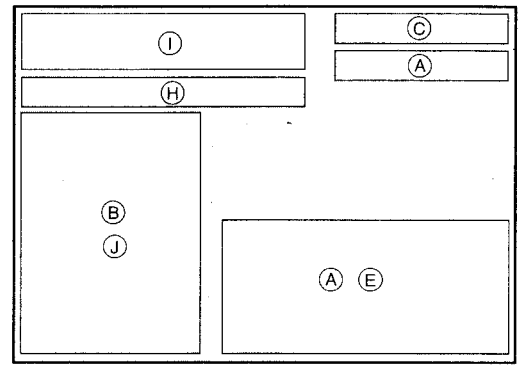
To cancel the setting
Press the ▼ key instead of the ▲ key in step 4.

To set so that the signal input from the connected equipment is displayed on the screen immediately after the power is turned on
Set to 0 min.

List of the Messages

Use the list below to check the meaning of the messages displayed on the screen.
The list is divided into sections depending on the location which the message appears. Check the location first, then refer to the alphabet for the section to find the message.

Ⓓ, Ⓕ, Ⓖ, Ⓚ and Ⓛ will appear all over the screen.



A Caution, Message	
•Not applicable!	•The key is not applicable in the current mode.
•Overflow!	•The adjustment data has passed the adjustable range limit, and does not change any more.
•PIC MUTING	•Picture muting mode is on.
•Input is not VIDEO.	•The input signal is not VIDEO.
•Input is not NTSC.	•The input signal is not NTSC.
•Input is not RGB.	•The input signal is not RGB.
•Input is B & W.	•The input signal is black and white.
•NO INPUT	•No signal is input.
B PIC CONTROL data	
•CONTR (CONTRAST)	•Contrast
•COLOR	•Color
•BRT (BRIGHTNESS)	•Brightness
•SHARP (SHARPNESS)	•Sharpness
•HUE	•Hue
•PIC CONTROL data reset	•Resets the PIC CONTROL data.
C Input channel	
•VIDEO	•Input from VIDEO IN
•INPUT-A	•Input from RGB IN
•INPUT-B	•Input from optional interface board
• SW'ER x-y (switcher x=1–2, y= 1–8)	•Input from optional switcher
• POSITION No. x VPH-1272Q/1272QM: x=1–21 VPH-1252Q/1252QM: x=1–9	•The cursor position in ZONE adjustment

D PAGE	
Subtitle	
•USER PRESET	•User preset
•USER CONTROL	•User control
•SYSTEM PRESET	•System preset
•INPUT INFO (INPUT INFORMATION)	•Input information
•OTHER ITEMS	•Other items
PAGE 1	
•STATUS ON/OFF	•On-screen display on/off
•PIC MUTING ON/OFF	•Picture muting mode on/off
•AUDIO MUTING ON/OFF	•Audio muting mode on/off
•CLEAR BLUE ON/OFF/ – – –	•Clear blue mode on/off/does not function.
•SECAM ON/OFF/ – – –	•Compulsive SECAM mode on/off/does not function.
PAGE 2	
•CONTR (CONTRAST)	•Contrast
•COLOR	•Color
•BRT (BRIGHTNESS)	•Brightness
•SHARP (SHARPNESS)	•Sharpness
•HUE	•Hue
•VOL	•Volume
•PIC CONTROL data reset	•Resets the PIC CONTROL data.
PAGE 3	
•COLOR TEMPERATURE: 9300/6500/3200/ PRESET	•Color temperature is set to 9300/6500/3200/ the data adjustable by the service personnel.
•CLAMP: AUTO / S on G/ H/C / H.P.	•Clamp position is set to automatic/internal/ external sync signal/ horizontal deflection pulse position.
•V-SHIFT: WIDE/ NARROW	•The adjustable range of vertical shift is wide/narrow.

List of the Message

PAGE 4	
•INPUT SIGNAL	•Input signal
•Y/C	•S video input signal from VIDEO IN
•RGB	•RGB input signal
•NTSC	•NTSC input signal from VIDEO IN
•PAL	•PAL input signal from VIDEO IN
•SECAM	•SECAM input signal from VIDEO IN
•B & W	•Black and white input signal from VIDEO IN
•f_H	•Horizontal frequency
•f_V	•Vertical frequency
•Internal oscillation	•Internal oscillation mode (No signal is input.)
•H/C-SYNC	•Horizontal sync signal or composite sync signal
•V-SYNC	•Vertical sync signal
•SYNC ON G	•Composite video signal
•H/C-SYNC: POS/NEG/ - - -	•The polarity of the H/C-SYNC is positive/ negative/not input.
•V-SYNC: POS/NEG/ - - -	•The polarity of the V-SYNC is positive/ negative/not input.
•SYNC ON G: NEG/ - - -	•The polarity of the SYNC ON G is negative/not input.
•REGI BLOCK: No. x	•The input signal is grouped into the registration memory block No. x.
PAGE 5	
•1. CRT TIMER DISPLAY	•CRT use time display
•2. BAUD RATE PRESET	•Baud rate setting display
PAGE 5-1	
•CRT TIMER DISPLAY MODE	•CRT use time display mode
RED: xxxx hours	•Red CRT use time: xxxx hours
GREEN: xxxx hours	•Green CRT use time: xxxx hours
BLUE: xxxx hours	•Blue CRT use time: xxxx hours
PAGE 5-2	
•RS422 COMMUNICATION BAUD RATE PRESET MODE 38.4K/19.2K/9600/4800	•The baud rate is set to 38.4K/19.2K/9600/4800 when communicating via the RS-422.

E Operation	
•YES: ▲	•Press ▲ key for "Yes".
•NO: ▼	•Press ▼ key for "No".
•SELECT: ◀ ▶	•Press ◀ or ▶ key to select.
•SELECT: ◀ ▶ ▲ ▼	•Press, ◀, ▶, ▲ or ▼ key to select.
•ADJ: ◀ ▶ ▲ ▼	•Press ◀, ▶, ▲ or ▼ key to adjust.
•ADJ: ◀ ▶	•Press ◀ or ▶ key to adjust.
•ADJ: ▲ ▼	•Press ▲ or ▼ key to adjust.
•NEXT: + −	•Press + key to move the cursor to the next position. Press − key to move the cursor to the previous position.
•NEXT: [PAGE]	•Press PAGE key to go to the next page.
•EXIT: [PAGE]	•Press PAGE key to exit the PAGE mode.
•EXIT: [NORMAL]	•Press NORMAL key to exit the TEST mode.
•ENTER: ▶	•Press ▶ key to execute the selected item.
•ENTER: ▲	•Press ▲ key to execute the selected item.
•CANCEL: ▼	•Press ▼ key to cancel the setting.

F Memory data	
•MEMORY DATA in saving.	•Saving the memory data now.
•MEMORY DATA saving is complete!	•Saving the memory data is completed.
•No key may be applicable during the indication of this mode.	•When in this mode (MEMORY DATA saving), no key functions.
•The registration data will be used as standard for all inputs OK?	•Is it all right that this registration data will be used as standard for all inputs?

G Data reset	
•Do you wish to return to factory preset data?	•Do you wish to reset the data to the factory preset data?
•Do you wish to return to previously saved data?	•Do you wish to reset the data to the previously saved data?
•Reset complete!	•Resetting is completed.
•RGB SIZE DATA RESET MODE	•RGB or video input size data resetting mode
•RGB SHIFT DATA RESET MODE	•RGB input shift data resetting mode
•BLANKING DATA RESET MODE	•Blanking data resetting mode
•CENTERING ALL COLOR DATA RESET MODE	•Centering data (all color) resetting mode
•W/B GAIN & BIAS ALL COLOR DATA RESET MODE	•Gain, bias (all color) data resetting mode
•REGISTRATION (RED/GREEN/BLUE) DATA RESET MODE	•Registration (red, green or blue) data resetting mode

H Raster	
•RASTER R G B	•Red, green and blue are projected.
•RASTER R - -	•Only red is projected.
•RASTER - G -	•Only green is projected.
•RASTER - - B	•Only blue is projected.
•RASTER R G -	•Red and green are projected.
•RASTER R - B	•Red and blue are projected.
•RASTER - G B	•Green and blue are projected.

I Adjustment	
•RGB SIZE ADJ	•RGB or video input size adjustment mode
•RGB SHIFT ADJ	•RGB input shift adjustment mode
•R CENT ADJ	•Red centering adjustment mode
•G CENT ADJ	•Green centering adjustment mode
•B CENT ADJ	•Blue centering adjustment mode
•SIZE ADJ	•Size adjustment mode
•fine	•Picture size fine-adjustment mode for green.
•LIN (LINEARITY) ADJ	•Linearity adjustment mode
•SKEW ADJ	•Skew adjustment mode
•BOW ADJ	•Bow adjustment mode
•KEY (KEYSTONE) ADJ	•Keystone adjustment mode
•PIN (PINCUSHION) ADJ	•Pincushion adjustment mode
•ZONE ADJ	•Zone adjustment mode
•BLKG ADJ UPPER/ LOWER/LEFT/RIGHT	•Blanking adjustment (upper, lower, left, or right) mode
•BIAS ADJ	•White balance bias adjustment mode
•GAIN ADJ	•White balance gain adjustment mode

List of the Messages

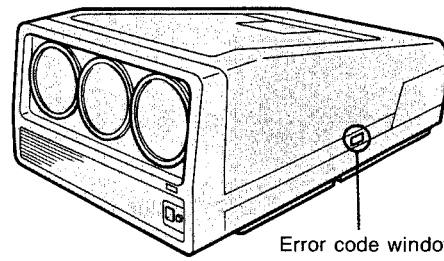
J Adjustment data	
•H: xxx	•Horizontal adjustment level (xxx = 0-255)
•V: xxx	•Vertical adjustment level (xxx = 0-255)
•Hf: xxx	•Centering adjustment level for horizontal direction (xxx = 0-255) The level changes with the arrow keys pressed once.
•Hc: xxx	•Centering adjustment level for horizontal direction (xxx = 0-255) The level changes with the arrow keys kept pressed.
•Vf: xxx	•Centering adjustment level for vertical direction (xxx = 0-255) The level changes with the arrow keys pressed once.
•Vc: xxx	•Centereing adjustment level for vertical direction (xxx = 0-255) The level changes with the arrow keys kept pressed.

K Caution, Message (VPH-1252Q/1252QM only)	
•fH is too high! This input signal cannot be projected as the horizontal frequency is too high.	•The horizontal frequency is too high. This input signal cannot be projected as the horizontal frequency exceeds the acceptable level of the projector.

L Others	
•For optimum performance, white screen will remain for 20 min. For immediate use, push [PAGE] key.	•For optimum performance, white screen will remain for 20 min. For immediate use, push PAGE key.
•INITIALIZATION TIME SETTING	•Initialization time setting mode.
•You can change the white screen display time. Standard 20 min ... xx min	•You can change the white screen display time. The factory preset time is 20 min. The current preset time is xx min.
•Do you wish to enter into the SERVICEMAN CONTROL MODE?	•Do you wish to enter into the service-personnel control mode?
•Do you wish to return to the USER CONTROL MODE?	•Do you wish to return to the user control mode?

About the Error Codes

When an operational error occurs, the power will automatically turn off and the error code will light up on the error code window inside the hood. See page 15 for how to open the hood. Refer to the chart below for the meanings.



Error code window
(inside the hood)

Y: Error occurrence

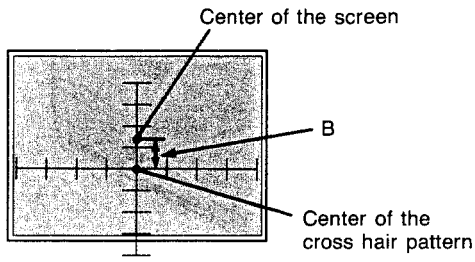
Code \ error	FAN stop	(H stop) 100V down	IK-over	V-stop	HV-over	power-down
01	Y	—	—	—	—	—
02	—	Y	—	—	—	—
03	Y	Y	—	—	—	—
04	—	—	Y	—	—	—
05	Y	—	Y	—	—	—
06	—	Y	Y	—	—	—
07	Y	Y	Y	—	—	—
08	—	—	—	Y	—	—
09	Y	—	—	Y	—	—
0A	—	Y	—	Y	—	—
0b	Y	Y	—	Y	—	—
0C	—	—	Y	Y	—	—
0d	Y	—	Y	Y	—	—
0E	—	Y	Y	Y	—	—
0_	Y	Y	Y	Y	—	—
10	—	—	—	—	Y	—
11	Y	—	—	—	Y	—
12	—	Y	—	—	Y	—
13	Y	Y	—	—	Y	—
14	—	—	Y	—	Y	—
15	Y	—	Y	—	Y	—
16	—	Y	Y	—	Y	—
17	Y	Y	Y	—	Y	—
18	—	—	—	Y	Y	—
19	Y	—	—	Y	Y	—
1A	—	Y	—	Y	Y	—
1b	Y	Y	—	Y	Y	—
1C	—	—	Y	Y	Y	—
1d	Y	—	Y	Y	Y	—
1E	—	Y	Y	Y	Y	—
1_	Y	Y	Y	Y	Y	—
20	—	—	—	—	—	Y

Notes

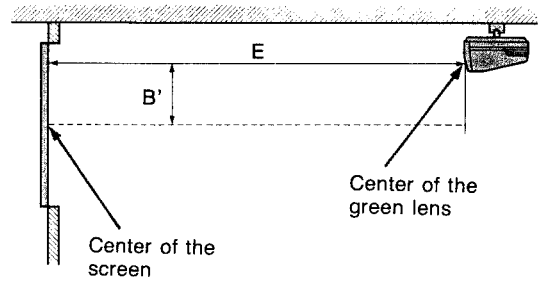
- When the error code lights up, all the previous adjustment data will be cleared.
- The error code will disappear when the MAIN POWER switch is turned off and the power cord is disconnected.
- The error code will light up every time the power is turned on unless the operational error is recovered to normal.

List of Washers Used for Non-standard Installation

A: Thickness of washer (mm)
B:



$\frac{B'}{E}$:



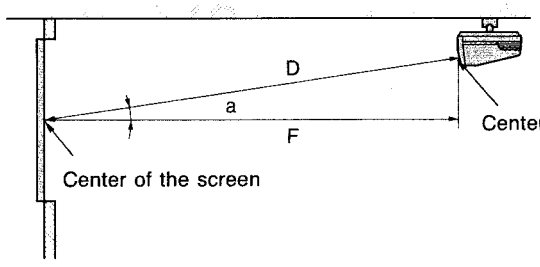
Angle of optical axis (°)	Screen size (inches) / $\frac{B'}{E}$		70	72	75	80	85	86	90	95	100	105	110	115
1	0.0087 – 0.0262	A	1+1.2	1+1.2	1+1.2	1+1.2	1+1.2	1+0.5	1+0.5	1+0.5	1+0.5	1+0.5	1+0.5	1+0.5
		B	60	60	60	65	70	70	75	80	80	85	90	95
2	0.0263 – 0.0437	A	1+1	1+1	1+1	1+1	1+1	1.2	1.2	1+0.4	1+0.4	1+0.4	1+0.4	1+0.4
		B	50	60	60	65	70	70	75	80	80	85	90	95
3	0.0438 – 0.0612	A	1.2+0.5	1.2+0.5	1.2+0.5	1.2+0.5	1.2+0.5	1.2	1.2	1.2	1.2	1.2	1.2	1.2
		B	55	55	60	65	70	70	70	75	80	85	90	95
4	0.0613 – 0.0787	A	1.2+0.4	1.2+0.5	1.2+0.5	1.2+0.5	1.2+0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0
		B	55	55	60	65	70	70	70	75	80	85	90	90
5	0.0788 – 0.0963	A	1+0.5	1+0.5	1+0.5	1.2+0.4	1.2+0.4	0.4+0.5	0.4+0.5	0.4+0.5	1.0	1.0	1.0	1.0
		B	55	55	60	65	70	70	70	75	80	85	90	90
6	0.0964 – 0.1139	A	1.2	1.2	1.2	1+0.4	1+0.4	0.5	0.4+0.4	0.4+0.4	0.4+0.4	0.4+0.5	0.4+0.5	0.4+0.5
		B	50	50	55	60	65	60	65	65	70	75	80	80
7	0.1140 – 0.1317	A	1.0	1.0	1.2	1.2	1.2	0.5	0.5	0.5	0.5	0.4+0.4	0.4+0.4	0.4+0.4
		B	45	45	50	50	55	55	55	60	60	65	70	70
8	0.1318 – 0.1495	A	0.4+0.5	1.0	1.0	1.0	1.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		B	40	40	40	45	50	45	45	50	50	55	60	60
9	0.1496 – 0.1673	A	0.4+0.4	0.4+0.4	0.4+0.5	1.0	1.0	0.4	0.4	0.4	0.5	0.5	0.5	0.5
		B	35	35	35	40	40	35	40	40	45	45	50	50
10	0.1674 – 0.1853	A	0.5	0.5	0.5	0.4+0.4	0.4+0.5	—	—	0.4	0.4	0.4	0.5	0.5
		B	25	30	30	30	35	30	30	35	35	40	40	40
11	0.1854 – 0.2035	A	0.4	0.5	0.5	0.5	0.4+0.4	—	—	—	—	0.4	0.4	0.4
		B	20	20	25	25	25	20	25	25	25	30	30	30
12	0.2036 – 0.2217	A	—	0.4	0.4	0.5	0.5	—	—	—	—	—	—	0.4
		B	15	15	15	20	20	14	14	15	20	20	20	20
13	0.2218 – 0.2401	A	—	—	—	0.4	0.5	—	—	—	—	—	—	—
		B	10	10	10	10	10	5	5	5	10	10	10	10
14	0.2402 – 0.2493	A	—	—	—	—	0.4	0.4	—	—	—	—	—	—
		B	5	5	5	5	5	0	0	0	0	0	0	0

Angle of optical axis (°)	Screen size (inches) B'/E		120	125	130	135	139	140	150	160	170	180	190	200
1	0.0087 – 0.0262	A	1+0.5	1+0.5	1+0.5	1+0.5	1+0.5	0.4+0.4	0.4+0.4	0.4+0.4	0.4+0.4	0.4+0.4	0.4+0.4	0.4+0.4
		B	100	105	110	110	115	115	120	130	140	150	155	165
2	0.0263 – 0.0437	A	1+0.4	1+0.4	1+0.4	1+0.4	1+0.4	0.5	0.4+0.4	0.4+0.4	0.4+0.4	0.4+0.4	0.4+0.4	0.4+0.4
		B	100	105	105	110	115	115	120	130	140	150	155	165
3	0.0438 – 0.0612	A	1.2	1.2	1.2	1.2	1.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		B	95	100	105	110	115	110	120	130	135	145	155	160
4	0.0613 – 0.0787	A	1.2	1.2	1.2	1.2	1.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		B	95	100	105	110	110	110	120	130	135	145	155	160
5	0.0788 – 0.0963	A	1.0	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		B	95	100	105	110	115	110	115	125	130	140	150	155
6	0.0964 – 0.1139	A	0.4+0.5	1.0	1.0	1.0	1.0	0.4	0.4	0.4	0.5	0.5	0.5	0.5
		B	85	90	95	100	100	95	100	110	115	125	130	140
7	0.1140 – 0.1317	A	0.4+0.4	0.4+0.5	0.4+0.5	0.4+0.5	0.4+0.5	—	0.4	0.4	0.4	0.4	0.4	0.5
		B	75	80	80	85	90	85	90	95	100	110	115	120
8	0.1318 – 0.1495	A	0.4+0.4	0.4+0.4	0.4+0.4	0.4+0.4	0.4+0.5	—	—	—	0.4	0.4	0.4	0.4
		B	65	65	70	75	75	70	75	80	85	90	95	100
9	0.1496 – 0.1673	A	0.5	0.5	0.5	0.4+0.4	0.4+0.4	—	—	—	—	—	0.4	0.4
		B	55	55	60	60	65	55	60	65	70	75	80	85
10	0.1674 – 0.1853	A	0.5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—
		B	45	45	50	50	55	40	45	50	55	55	60	65
11	0.1854 – 0.2035	A	0.5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—
		B	35	35	35	40	40	30	30	35	40	40	45	45
12	0.2036 – 0.2217	A	0.4	0.4	0.5	0.5	0.5	—	—	—	—	—	—	—
		B	20	25	25	25	25	15	20	20	20	25	25	30
13	0.2218 – 0.2401	A	—	0.4	0.4	0.4	0.4	—	—	—	—	—	—	—
		B	10	10	15	15	15	5	5	5	5	10	10	10
14	0.2402 – 0.2493	A	—	—	—	0.4	0.4	—	—	—	—	—	—	—
		B	0	0	0	5	5	0	0	5	5	5	5	5

List of Washers Used for Non-standard Installation

Angle of optical axis (°)	Screen size (inches) B'/E		210	220	230	240	250	260	270	280	290	300
1	0.0087 – 0.0262	A	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.5	0.4 + 0.5
		B	175	180	190	200	205	215	225	235	240	250
2	0.0263 – 0.0437	A	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4
		B	175	180	190	200	210	215	225	235	245	250
3	0.0438 – 0.0612	A	0.5	0.5	0.5	0.5	0.5	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4
		B	170	180	185	195	205	215	225	235	245	250
4	0.0613 – 0.0787	A	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4 + 0.4	0.4 + 0.4	0.4 + 0.4
		B	170	180	185	195	205	215	220	230	240	245
5	0.0788 – 0.0963	A	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		B	165	170	180	190	195	205	215	220	230	235
6	0.0964 – 0.1139	A	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5
		B	145	155	160	165	175	185	190	200	205	210
7	0.1140 – 0.1317	A	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4
		B	125	135	140	145	155	160	165	170	180	185
8	0.1318 – 0.1495	A	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
		B	110	115	120	125	130	135	141	145	150	160
9	0.1496 – 0.1673	A	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5
		B	90	95	100	105	110	115	115	120	125	130
10	0.1674 – 0.1853	A	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5
		B	70	70	75	80	80	20	20	20	20	20
11	0.1854 – 0.2035	A	—	—	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5
		B	50	50	55	55	60	10	10	15	15	15
12	0.2036 – 0.2217	A	—	—	—	—	0.4	0.4	0.4	0.4	0.4	0.4
		B	30	30	35	35	40	10	10	15	15	15
13	0.2218 – 0.2401	A	—	—	—	—	—	—	0.4	0.4	0.4	0.4
		B	10	15	15	15	15	10	10	15	15	15
14	0.2402 – 0.2493	A	—	—	—	—	—	—	—	—	—	—
		B	5	10	10	10	10	0	0	0	0	0

Projection Distance by Angle of Optical Axis



a: Angle of optical axis
D, F: Projection distance

Screen size (inches)	a = 1°		a = 2°		a = 3°		a = 4°		a = 5°		a = 6°	
	D (mm)	F (mm)	D (mm)	F (mm)	D (mm)	F (mm)	D (mm)	F (mm)	D (mm)	F (mm)	D (mm)	F (mm)
70	2038	2037	2038	2037	2039	2036	2039	2035	2040	2032	2041	2030
72	2091	2091	2092	2090	2168	2089	2093	2088	2093	2085	2094	2083
75	2170	2170	2171	2169	2171	2168	2172	2167	2173	2164	2174	2162
80	2302	2302	2303	2301	2303	2300	2304	2299	2313	2304	2316	2303
85	2437	2437	2435	2433	2444	2440	2454	2448	2464	2454	2467	2454
86	2461	2460	2461	2460	2462	2458	2463	2457	2470	2460	2476	2462
90	2566	2566	2567	2565	2568	2564	2568	2562	2569	2559	2570	2556
95	2698	2698	2698	2697	2700	2696	2700	2694	2701	2690	2703	2688
100	2830	2830	2831	2829	2832	2828	2832	2826	2833	2822	2835	2819
105	2963	2962	2964	2962	2965	2960	2965	2958	2966	2954	2968	2952
110	3096	3095	3097	3095	3098	3093	3098	3091	3099	3087	3101	3084
115	3224	3223	3225	3223	3225	3221	3226	3219	3227	3214	3229	3211
120	3352	3351	3352	3350	3353	3349	3354	3346	3355	3342	3357	3339
125	3484	3483	3484	3482	3458	3454	3486	3478	3487	3473	3489	3470
130	3616	3615	3616	3614	3617	3612	3619	3610	3629	3615	3630	3610
135	3748	3747	3749	3746	3751	3744	3753	3744	3773	3758	3773	3753
139	3853	3852	3854	3852	3855	3850	3868	3858	3887	3871	3888	3866
140	3880	3879	3881	3878	3882	3876	3888	3879	3901	3885	3905	3883
145	4012	4011	4013	4010	4014	4008	4015	4005	4022	4006	4027	4005
150	4144	4143	4145	4142	4146	4140	4147	4137	4149	4132	4151	4128
155	4275	4274	4276	4274	4277	4271	4279	4268	4280	4263	4283	4259
160	4406	4405	4407	4405	4409	4403	4410	4399	4412	4394	4414	4390
165	4538	4537	4539	4536	4540	4534	4541	4531	4543	4525	4546	4521
170	4669	4668	4670	4667	4672	4665	4673	4662	4675	4656	4677	4652
175	4800	4799	4802	4799	4803	4796	4804	4793	4806	4787	4809	4782
180	4932	4931	4933	4930	4934	4927	4936	4924	4937	4918	4940	4913
185	5063	5062	5064	5061	5066	5059	5067	5055	5069	5049	5072	5044
190	5194	5193	5196	5193	5197	5190	5199	5186	5200	5180	5203	5175
195	5326	5325	5327	5324	5329	5321	5330	5317	5332	5311	5335	5306
200	5457	5456	5458	5455	5460	5452	5462	5448	5463	5442	5467	5437
205	5590	5589	5592	5588	5593	5585	5595	5581	5597	5574	5600	5569
210	5723	5722	5725	5721	5726	5718	5728	5714	5730	5707	5733	5702
215	5856	5855	5858	5854	5860	5851	5861	5847	5863	5840	5867	5834
220	5990	5988	5991	5988	5993	5984	5995	5980	5997	5973	6000	5967
225	6123	6121	6124	6121	6126	6117	6128	6113	6130	6105	6133	6100
230	6256	6255	6257	6254	6259	6251	6261	6246	6263	6238	6267	6232
235	6389	6388	6391	6387	6392	6384	6394	6379	6397	6371	6400	6365
240	6522	6521	6524	6520	6526	6517	6528	6512	6530	6504	6534	6498
245	6655	6654	6657	6653	6659	6650	6661	6645	6663	6636	6667	6630
250	6788	6787	6790	6786	6792	6783	6794	6778	6796	6769	6800	6763
260	7055	7053	7057	7053	7058	7048	7061	7044	7063	7036	7067	7028
270	7321	7320	7323	7319	7325	7315	7327	7309	7330	7302	7334	7293
280	7587	7586	7589	7584	7591	7581	7594	7576	7596	7567	7601	7559
290	7853	7852	7856	7851	7858	7847	7860	7841	7863	7833	7867	7824
300	8120	8119	8122	8117	8124	8113	8127	8107	8130	8099	8134	8089

Projection Distance by Angle of Optical Axis

Screen size (inches)	a = 7°		a = 8°		a = 9°		a = 10°		a = 11°		a = 12°	
	D (mm)	F (mm)	D (mm)	F (mm)	D (mm)	F (mm)	D (mm)	F (mm)	D (mm)	F (mm)	D (mm)	F (mm)
70	2042	2027	2044	2024	2045	2020	2047	2016	2049	2012	2051	2006
72	2096	2080	2097	2077	2099	2073	2101	2069	2103	2064	2105	2059
75	2175	2159	2177	2155	2178	2152	2180	2147	2182	2142	2185	2137
80	2317	2300	2319	2296	2319	2291	2320	2285	2322	2279	2323	2272
85	2469	2451	2471	2447	2471	2441	2472	2435	2473	2428	2476	2421
86	2478	2459	2479	2455	2483	2452	2488	2450	2491	2445	2492	2438
90	2572	2553	2574	2549	2576	2545	2582	2542	2584	2537	2586	2529
95	2704	2684	2707	2680	2709	2675	2711	2670	2714	2664	2718	2658
100	2837	2815	2839	2811	2841	2806	2844	2801	2847	2795	2851	2788
105	2970	2948	2972	2943	2975	2938	2978	2932	2981	2926	2984	2919
110	3103	3080	3106	3075	3108	3070	3111	3064	3114	3057	3118	3050
115	3231	3207	3234	3202	3236	3197	3240	3190	3243	3183	3247	3175
120	3359	3334	3362	3329	3365	3323	3368	3317	3372	3309	3376	3301
125	3492	3465	3494	3460	3497	3454	3501	3447	3504	3440	3509	3431
130	3632	3605	3632	3597	3637	3592	3639	3584	3640	3573	3642	3561
135	3776	3748	3776	3739	3779	3733	3783	3725	3785	3716	3784	3701
139	3890	3861	3890	3853	3894	3846	3899	3839	3900	3828	3901	3815
140	3913	3884	3915	3877	3920	3871	3921	3861	3925	3853	3929	3842
145	4030	4000	4037	3998	4041	3991	4042	3981	4047	3973	4051	3961
150	4154	4123	4159	4118	4162	4111	4165	4102	4170	4093	4175	4083
155	4285	4253	4289	4247	4293	4240	4297	4232	4302	4223	4307	4212
160	4417	4384	4421	4378	4425	4370	4429	4362	4434	4353	4440	4342
165	4549	4515	4552	4508	4557	4500	4561	4492	4567	4482	4572	4472
170	4680	4645	4684	4639	4688	4631	4693	4622	4699	4612	4704	4601
175	4812	4776	4816	4769	4820	4761	4825	4752	4831	4742	4837	4730
180	4944	4907	4948	4900	4952	4891	4957	4882	4963	4872	4969	4860
185	5075	5037	5079	5030	5084	5021	5090	5012	5095	5001	5101	4989
190	5207	5168	5211	5161	5216	5152	5222	5142	5227	5131	5234	5119
195	5339	5299	5343	5291	5348	5282	5354	5272	5360	5261	5366	5248
200	5470	5429	5475	5422	5480	5412	5486	5402	5492	5391	5498	5377
205	5604	5562	5608	5554	5613	5544	5619	5534	5626	5522	5633	5509
210	5737	5694	5748	5692	5747	5676	5753	5666	5760	5654	5767	5640
215	5871	5827	5875	5818	5881	5808	5887	5798	5894	5785	5901	5771
220	6004	5959	6009	5951	6014	5940	6021	5929	6028	5917	6035	5902
225	6138	6092	6143	6083	6148	6073	6155	6061	6162	6048	6169	6033
230	6271	6224	6276	6215	6282	6205	6289	6193	6296	6180	6303	6165
235	6405	6357	6410	6348	6416	6337	6422	6325	6430	6311	6437	6296
240	6538	6489	6543	6480	6549	6469	6556	6457	6564	6443	6572	6427
245	6672	6622	6676	6612	6683	6601	6690	6588	6698	6574	6706	6558
250	6805	6754	6810	6744	6817	6733	6823	6720	6832	6706	6840	6689
260	7092	7033	7078	7009	7084	6997	7101	6993	7107	6976	7113	6958
270	7339	7299	7345	7274	7352	7261	7369	7257	7376	7240	7382	7221
280	7606	7564	7612	7538	7619	7525	7637	7521	7644	7504	7650	7483
290	7873	7830	7879	7802	7886	7789	7905	7785	7912	7767	7919	7746
300	8140	8095	8146	8067	8154	8054	8173	8049	8181	8031	8187	8008